
TOP OPERATING

Treatment Summary

TANAKA 1-2

BOULDER COUNTY, COLORADO

**SECTION 2
TOWNSHIP 1N
RANGE 69W**

CODELL / NIOBRARA FORMATION

**Treatment Date:
SEPTEMBER 30, 1999**



Top Operating
7500 W. Mississippi Ste. B-3
Lakewood, Co 8026-4541

Tanaka 1-2
Sec. 2 T1N R69W
Codell/Niobrara Fracture

Weld, CO

Fracturing
Recommendation

Prepared for: Mr. Andy Peterson

7/30/99

Prepared by:
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Halliburton Energy Services
P.O.BOX 659
BRIGHTON COLO. 80601

(303) 825-4346

Well Information _____

Formation	Codell/Niobrara
Frac Grad.	0.75 psi.
Niobrara Perforations	7465-7500 ft.
Codell Perforations	7620-7635
BHT	240 Deg F
Casing Size	4.5" 10.5#
Tubing Size	2.875" 6.5#
Packer @	7400 ft.

Job Recommendation

PAD DETAILS: (34,000 gal)

Base Fluid	35 lb Prima Gel
Mixing Fluid	Clay Fix II Water
Gelling Agent	8.75 gal/M LGC-VI
Crosslinker	0.53 gal/M CL-23
Crosslinker	0.22 gal/M CL-29
Surfactant	0.5 gal/M SSO-21M
Surfactant	0.5 gal/M LOSURF-300
Clay Control	2.0 gal/M CLAYFIX II
pH Buffer	3.0 lbs/M BA-2
Breaker	0.25 lbs/M GBW-3
Breaker	0.25 lbs/M OPTIFLO-III
Gel Stabilizer	10 lbs/M GEL-STA

SLF 33# DETAILS: (53,000 gal)

Base Fluid	33 lb Prima Gel
Mixing Fluid	Clay Fix II Water
Gelling Agent	8.25 gal/M LGC-VI
Crosslinker	0.53 gal/M CL-23
Crosslinker	0.22 gal/M CL-29
Surfactant	0.5 gal/M SSO-21M
Surfactant	0.5 gal/M LOSURF-300
Clay Control	2.0 gal/M CLAYFIX II
pH Buffer	3.0 lbs/M BA-2
Breaker	0.25 lbs/M GBW-3
Breaker	0.25 lbs/M OPTIFLO-III
Gel Stabilizer	5.0 lbs/M GEL-STA

Job Recommendation (Cont')

SLF 31# DETAILS: (48,500 gal)

Base Fluid	31 lb Prima Gel
Mixing Fluid	Clay Fix II Water
Gelling Agent	7.75 gal/M LGC-VI
Crosslinker	0.53 gal/M CL-23
Crosslinker	0.22 gal/M CL-29
Surfactant	0.5 gal/M SSO-21M
Surfactant	0.5 gal/M LOSURF-300
Clay Control	2.0 gal/M CLAYFIX II
pH Buffer	3.0 lbs/M BA-2
Breaker	0.25 lbs/M GBW-3
Breaker	0.5 lbs/M OPTIFLO-III (First 25,500 gal)
Breaker	0.5 lbs/M OPTIFLO-II (Next 16,000 gal)
Breaker	0.5 lbs/M OPTIFLO-II (Last 7,000 gal)
Breaker	0.75 lbs/M SP Breaker (Next 16,000 gal)
Breaker	1.25 lbs/M SP Breaker (Last 7,000 gal)

DISPLACEMENT DETAILS: (4,500 gal)

Mixing Fluid	Clay Fix II Water
Breaker	1.0 lbs/M SP Breaker (First 2,000 gal)
Clay Control	2 gal/M CLAYFIX II (First 2,000 gal)

PUR-GEL III Fluid***Job Procedure***

STAGE	FLUID	CONC	PROPPANT
1 - Pad	34,000 gal Pad		
2 - SLF	9,000 gal SLF	2 lb/gal	20/40 White Sand (18,000 lb)
3 - SLF	11,000 gal SLF	3 lb/gal	20/40 White Sand (33,000 lb)
4 - SLF	58,500 gal SLF	4 lb/gal	20/40 White Sand (234,000 lb)
5 - SLF	23,000 gal SLF	5 lb/gal	20/40 White Sand (115,000 lb)
6 - Flush	4,500 gal Displacement		

Treat via 2.875" Tubing at 22 bpm as follows:

Totals:

Total Liquid 141,500 gallons

Tank Bottoms 8,000 gallons

8 tanks full

400,000 lbs of White 20/40 mesh sand

PUR-GEL III Fluid

Cost Estimate

<u>Price Ref</u>	<u>Description</u>	<u>Qty</u>	<u>U/M</u>	<u>Unit Price</u>	<u>Total</u>
Equipment Charges					
300-111	MILEAGE FOR STIMULATION EQUIP	20	MI	\$ 3.65	\$ 427.05
		13	UNT		
300-112	MILEAGE FOR STIMULATION CREW	20	MI	2.15	38.70
		2	UNT		
307-780	TECHCOMMAND W/O ARC SYSTEM	4	HR	3,675.00	1,653.75
301-201	SLURRY PROCESSOR SYSTEM	22	BPM	3,931.20	1,769.04
301-085	MINIMUM PUMP CHG HT-400 V-12	4	HR	2,940.00	5,292.00
	(PER 2 HR)	4	PMP		
307-660	FLOWMETER- PER TREATMENT	1	JOB	290.85	130.88
390-740	GROUND MANIF OR FRAC MANIFTRL	1	JOB	1,020.75	459.34
307-621	CASING CONTROL VALVE	1	DAY	905.05	407.27
307-962	MOBILE LAB VAN W/TECH	1	DAY	2,546.25	1,145.81
307-220	MOUNTAIN MOVER SAND SYSTEM	1	DAY	1,236.25	1,112.63
		2	UNT		
307-802	RADIOACTIVE DENSOMETER	1	JOB	615.30	276.88
200-024	PUMPING SERVICE FIRST 4 HRS	3000	PSI	1,076.25	484.31
200-025	PUMPING SERVICE - ADD HRS	3000	PSI	267.75	240.98
		2	HR		
Gel System & Additives Charges					
307-603	PRIMA GEL (35 LB)	34000	GAL	13.75	7,363.13
307-603	PRIMA GEL (33 LB)	53000	GAL	13.75	10,821.94
307-603	PRIMA GEL (31 LB)	49000	GAL	13.75	9,398.81
310-629	LGC-VI	1111	GAL	56.85	N/C
310-377	CL-23	72	GAL	0.00	N/C
310-384	CL-29	30	GAL	0.00	N/C
314-122	BA-2	407	LB	0.00	N/C
218-517	SSO-21M	68	GAL	35.50	1,086.30
218-703	LOSURF 300	68	GAL	37.50	1,147.50
314-163	CLAYFIX II	283	GAL	34.20	4,355.37
310-364	GBW-3	34	LB	12.15	185.90
311-081	OPTIFLO-III	35	LB	31.00	488.25
310-367	GEL-STA	600	LB	2.30	621.00
311-080	OPTIFLO-II	12	LB	21.95	118.53
311-050	SP BREAKER	23	LB	6.55	67.79
313-394	BE-5	48	LB	48.45	1,046.52
Bulk Charges					
510-198	SAND 20/40 WHITE BULK (PER 100 LB)	400000	LB	8.13	14,634.00
301-197	PROPPANT PUMP CHARGE	2.0	PPG	0.05	1,777.50
		79000	GAL		
301-197	PROPPANT PUMP CHARGE	5.0	PPG	0.13	1,345.50
		23000	GAL		
500-340	MILEAGE FOR BULK FRAC.MATERIAL	4000	TMI	1.25	2,250.00

TOTAL AMOUNT	\$ 155,346.00
DISCOUNT AMOUNT	85,440.32

DISCOUNTED TOTAL	\$ 69,905.68
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Conditions

NOTE

The cost in this analysis is good for the materials and/or services outlined within. These prices are based on Halliburton being awarded the work on a first call basis. Prices will be reviewed for adjustments if awarded on 2nd or 3rd call basis and/or after 30 days of this written analysis. This is in an effort to schedule our work and maintain a high quality of performance for our customers.

The unit prices stated in the proposal are based on our current published prices. The projected equipment, personnel, and material needs are only estimates based on information about the work presently available to us. At the time the work is actually performed, conditions then existing may require an increase or decrease in the equipment, personnel, and/or material needs. Charges will be based upon unit prices in effect at the time the work is performed and the amount of equipment, personnel, and/or material actually utilized in the work. Taxes, if any, are not included. Applicable taxes, if any, will be added to the actual invoice.

It is understood and agreed between the parties that with the exception of the subject discounts, all services performed and equipment and materials sold are provided subject to Halliburton's General Terms and Conditions contained in our current price list, (which include LIMITATION OF LIABILITY and WARRANTY provisions), and pursuant to the applicable Halliburton Work Order Contract (whether or not executed by you), unless a Master Service and/or Sales Contract applicable to the services, equipment, or materials supplied exists between your company and Halliburton, in which case the negotiated Master Contract shall govern the relationship between the parties. We enclose a copy of the General Terms and Conditions, for your convenient review, and we would appreciate receiving any questions you may have about them. Should your company be interested in negotiating a Master Contract with Halliburton, our Law Department would be pleased to work with you to finalize a mutually agreeable contract. In this connection, it is also understood and agreed that Customer will continue to execute Halliburton usual field work orders and/or tickets customarily required by Halliburton in connection with the furnishing of said services, equipment, and materials.

Any terms and conditions contained in purchase orders or other documents issued by the customer shall be of no effect except to confirm the type and quantity of services, equipment, and materials to be supplied to the customer.

If customer does not have an approved open account with Halliburton or a mutually executed written contract with Halliburton, which dictates payment terms different than those set forth in this clause, all sums due are payable in cash at the time of performance of services or delivery of equipment, products, or materials. If customer has an approved open account, invoices are payable on the twentieth day after date of invoice. Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event Halliburton employs an attorney for collection of any account, customer agrees to pay attorney fees of 20% of the unpaid account, plus all collection and court costs.

Company: Top Operating

Lease: Tanaka 1-2

35# PrimaGel



HALLIBURTON

Formaton: New Codell-Niobrara

240 °F

Location: Sec. 2 T1N R69W

Stage	Fluid Schedule	Volume (gal)	Proppant Type.	Prop Conc. (ppg)	Prop Total (lbs)	Slurry Vol. (gals)	Rate (bpm)	Stage Time (h:min:sec)	Exposure Time (h:min:sec)	LGC-6 (gpt)	CL 23/29 (gpt)	SSO-21 (gpt)	LoSurf-300 (gpt)	ClayFix II (gpt)	BA-2 (gpt)	GBW-3 (gpt)	Optiflo III (ppt)	Optiflo II (ppt)	SP (ppt)	GelSta (ppt)
1	Load & Break	4000				4000	5	0:19:03	3:07:14					2.00						
2	Closure							0:00:00												
3	Pre-Pad	18000				18000	22	0:19:29	2:48:11	8.75	0.75	0.50	0.50	2.00	3.00	0.25	0.25			10.00
4	Rev. Step Rate							0:00:00												
5	Pad	16000				16000	22	0:17:19	2:28:42	8.75	0.75	0.50	0.50	2.00	3.00	0.25	0.25			10.00
6	PrimaGel 33# HT	9000	Ottawa 20/40	2	18000	9814	22	0:10:37	2:11:23	8.25	0.75	0.50	0.50	2.00	3.00	0.25	0.25			5.00
7	PrimaGel 33# HT	11000	Ottawa 20/40	3	33000	12493	22	0:13:31	2:00:46	8.25	0.75	0.50	0.50	2.00	3.00	0.25	0.25			5.00
8	PrimaGel 33# HT	33000	Ottawa 20/40	4	132000	38973	22	0:42:11	1:47:14	8.25	0.75	0.50	0.50	2.00	3.00	0.25	0.25			5.00
9	PrimaGel 31#	25500	Ottawa 20/40	4	102000	30115	22	0:32:36	1:05:04	7.75	0.75	0.50	0.50	2.00	3.00	0.25	0.50			
10	PrimaGel 31#	16000	Ottawa 20/40	5	80000	19620	22	0:21:14	0:32:28	7.75	0.75	0.50	0.50	2.00	3.00	0.25		0.50	0.75	
11	PrimaGel 31#	7000	Ottawa 20/40	5	35000	8584	22	0:09:17	0:11:14	7.75	0.75	0.50	0.50	2.00	3.00	0.25		0.50	1.25	
12	Flush	1799				1799	22	0:01:57	0:01:57					2.00						
13								0:00:00												
14								0:00:00												
15								0:00:00												
TOTAL FLUID:		141299 gal	Total Proppant:		400000	159399	Total Pump Time:		3:07 (hr:min)	1111	102	68	68	283	407	34	35	12	21	605
Pad+SLF+Flush:		137299 gal	Average Rate:		20.3 bpm	CallSheet Totals for Materials. On Loc. 15 % Excess														
Pad+SLF:		135500 gal	Treatment Down:		Tubing / Packer w/backside pump															
Percent Pad:		25.1%	Abs. Min. HHP:		3,770 HHP															
					GelSta															

MAX PRESSURE:		7000 psi	S.G.:	0.75
Anticipated Surface Pres:	4433 psi	T Perf	B Perf	
Perforations:	65	Perf Zone #1	7,465	7,500
Dia. in:	0.31	Perf Zone #2	7,620	7,635
Calc. Perf Fric (psi):	36	Perf Zone #3		
Est. Well Bore Fric (psi):	2,000	Perf Zone #4		
WELL-BORE PATH				
2 7/8" 6.5#		7400 ft		
4 1/2" 10.5#		65 ft		
		ft		

MAXIMUM CHEMICAL ADDITIVE									
Pump Rates (gal/min)									
22.0 bpm									
Bucket Test Time for 1 gal (min:sec)									
0.07 1.27 2.10 2.10 0.32 0.22 4.20									

Calc. BHP:	5670 psi
Average Gel Wt.	32.79 #
Average Prop Conc.	2.95 ppg

Top Operating New Codell-Niobrara 25.1% 35# PrimaGel 135500gals 400000#'

9/8/99 3:40 PM

Counter

Comment	Clean	Clean	Prop	Slurry	Connter								Optiflo II	Optiflo I	SP	GelSta	Proppan
	Volume	Volume	Conc	Volume	LGC-6	CL 23/29	SSO-21	LoSurf-300	ClayFix I	BA-2	GBW-3						
	(gals)	(bbls)	(lbs)	(bbls)													Total
	3000	71		71	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
	4000	95		95	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
	End Stage																
	End Stage																
	7000	167		167	26.3	2.3	1.5	1.5	14.0	9.0	0.8	0.0	0.8	0.0	0.0	30	0
	10000	238		238	52.5	4.5	3.0	3.0	20.0	18.0	1.5	0.0	1.5	0.0	0.0	60	0
	13000	310		310	78.8	6.8	4.5	4.5	26.0	27.0	2.3	0.0	2.3	0.0	0.0	90	0
	16000	381		381	105.0	9.0	6.0	6.0	32.0	36.0	3.0	0.0	3.0	0.0	0.0	120	0
	19000	452		452	131.3	11.3	7.5	7.5	38.0	45.0	3.8	0.0	3.8	0.0	0.0	150	0
	22000	524		524	157.5	13.5	9.0	9.0	44.0	54.0	4.5	0.0	4.5	0.0	0.0	180	0
	End Stage																
	End Stage																
	25000	595		595	183.8	15.8	10.5	10.5	50.0	63.0	5.3	0.0	5.3	0.0	0.0	210	0
	28000	667		667	210.0	18.0	12.0	12.0	56.0	72.0	6.0	0.0	6.0	0.0	0.0	240	0
	31000	738		738	236.3	20.3	13.5	13.5	62.0	81.0	6.8	0.0	6.8	0.0	0.0	270	0
	34000	810		810	262.5	22.5	15.0	15.0	68.0	90.0	7.5	0.0	7.5	0.0	0.0	300	0
	37000	881		881	288.8	24.8	16.5	16.5	74.0	99.0	8.3	0.0	8.3	0.0	0.0	330	0
	38000	905		905	297.5	25.5	17.0	17.0	76.0	102.0	8.5	0.0	8.5	0.0	0.0	340	0
	End Stage																
	41000	976	2.00	983	322.3	27.8	18.5	18.5	82.0	111.0	9.3	0.0	9.3	0.0	0.0	355	6000
	44000	1048	2.00	1061	347.0	30.0	20.0	20.0	88.0	120.0	10.0	0.0	10.0	0.0	0.0	370	12000
	47000	1119	2.00	1138	371.8	32.3	21.5	21.5	94.0	129.0	10.8	0.0	10.8	0.0	0.0	385	18000
	End Stage																
	50000	1190	3.00	1220	396.5	34.5	23.0	23.0	100.0	138.0	11.5	0.0	11.5	0.0	0.0	400	27000
	53000	1262	3.00	1301	421.3	36.8	24.5	24.5	106.0	147.0	12.3	0.0	12.3	0.0	0.0	415	36000
	56000	1333	3.00	1382	446.0	39.0	26.0	26.0	112.0	156.0	13.0	0.0	13.0	0.0	0.0	430	45000
	58000	1381	3.00	1436	462.5	40.5	27.0	27.0	116.0	162.0	13.5	0.0	13.5	0.0	0.0	440	51000
	End Stage																
	61000	1452	4.00	1520	487.3	42.8	28.5	28.5	122.0	171.0	14.3	0.0	14.3	0.0	0.0	455	63000
	64000	1524	4.00	1605	512.0	45.0	30.0	30.0	128.0	180.0	15.0	0.0	15.0	0.0	0.0	470	75000
	67000	1595	4.00	1689	536.8	47.3	31.5	31.5	134.0	189.0	15.8	0.0	15.8	0.0	0.0	485	87000
	70000	1667	4.00	1773	561.5	49.5	33.0	33.0	140.0	198.0	16.5	0.0	16.5	0.0	0.0	500	99000
	73000	1738	4.00	1858	586.3	51.8	34.5	34.5	146.0	207.0	17.3	0.0	17.3	0.0	0.0	515	111000
	76000	1810	4.00	1942	611.0	54.0	36.0	36.0	152.0	216.0	18.0	0.0	18.0	0.0	0.0	530	123000
	79000	1881	4.00	2026	635.8	56.3	37.5	37.5	158.0	225.0	18.8	0.0	18.8	0.0	0.0	545	135000
	82000	1952	4.00	2111	660.5	58.5	39.0	39.0	164.0	234.0	19.5	0.0	19.5	0.0	0.0	560	147000
	85000	2024	4.00	2195	685.3	60.8	40.5	40.5	170.0	243.0	20.3	0.0	20.3	0.0	0.0	575	159000
	88000	2095	4.00	2279	710.0	63.0	42.0	42.0	176.0	252.0	21.0	0.0	21.0	0.0	0.0	590	171000
	91000	2167	4.00	2364	734.8	65.3	43.5	43.5	182.0	261.0	21.8	0.0	21.8	0.0	0.0	605	183000
	End Stage																
	94000	2238	4.00	2448	758.0	67.5	45.0	45.0	188.0	270.0	22.5	0.0	23.3	0.0	0.0	605	195000
	97000	2310	4.00	2533	781.3	69.8	46.5	46.5	194.0	279.0	23.3	0.0	24.8	0.0	0.0	605	207000
	100000	2381	4.00	2617	804.5	72.0	48.0	48.0	200.0	288.0	24.0	0.0	26.3	0.0	0.0	605	219000
	103000	2452	4.00	2701	827.8	74.3	49.5	49.5	206.0	297.0	24.8	0.0	27.8	0.0	0.0	605	231000
	106000	2524	4.00	2786	851.0	76.5	51.0	51.0	212.0	306.0	25.5	0.0	29.3	0.0	0.0	605	243000
	109000	2595	4.00	2870	874.3	78.8	52.5	52.5	218.0	315.0	26.3	0.0	30.8	0.0	0.0	605	255000
	112000	2667	4.00	2954	897.5	81.0	54.0	54.0	224.0	324.0	27.0	0.0	32.3	0.0	0.0	605	267000
	115000	2738	4.00	3039	920.8	83.3	55.5	55.5	230.0	333.0	27.8	0.0	33.8	0.0	0.0	605	279000
	116500	2774	4.00	3081	932.4	84.4	56.3	56.3	233.0	337.5	28.1	0.0	34.5	0.0	0.0	605	285000
	End Stage																
	119500	2845	5.00	3168	955.6	86.6	57.8	57.8	239.0	346.5	28.9	0.0	34.5	1.5	2.3	605	300000
	122500	2917	5.00	3256	978.9	88.9	59.3	59.3	245.0	355.5	29.6	0.0	34.5	3.0	4.5	605	315000
	125500	2988	5.00	3344	1002.1	91.1	60.8	60.8	251.0	364.5	30.4	0.0	34.5	4.5	6.8	605	330000
	128500	3060	5.00	3431	1025.4	93.4	62.3	62.3	257.0	373.5	31.1	0.0	34.5	6.0	9.0	605	345000
	131500	3131	5.00	3519	1048.6	95.6	63.8	63.8	263.0	382.5	31.9	0.0	34.5	7.5	11.3	605	360000
	132500	3155	5.00	3548	1056.4	96.4	64.3	64.3	265.0	385.5	32.1	0.0	34.5	8.0	12.0	605	365000
	End Stage																
	135500	3226	5.00	3636	1079.6	98.6	65.8	65.8	271.0	394.5	32.9	0.0	34.5	9.5	15.8	605	380000
	138500	3298	5.00	3723	1102.9	100.9	67.3	67.3	277.0	403.5	33.6	0.0	34.5	11.0	19.5	605	395000
	139500	3321	5.00	3752	1110.6	101.6	67.8	67.8	279.0	406.5	33.9	0.0	34.5	11.5	20.8	605	400000
	End Stage																
	141299	3364		3795	1110.6	101.6	67.8	67.8	282.6	406.5	33.9	0.0	34.5	11.5	20.8	605	400000
	End Stage																
	End Stage																
	End Stage																
	End Stage																

Top Operating New Codell-Niobrara 25.1% 35# PrimaGel 135500gals 400000#'

9/8/99 3:40 PM



**Sand Sieve Work
Sheet**
RMNWA Laboratory

Customer: Top Operating
Interval: New Codell-Niobrara
Lease: Tanaka 1-2
Date: September 30, 1999

Average Retained 91.4%

Truck Unit:										
Compartment	1		2		3		4		5	
Sieve Size	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%
16	T	0.0%	T	0.0%	T	0.0%	T	0.0%	T	0.0%
20	4.3	3.5%	6.7	5.7%	5.4	4.1%	5.6	5.3%	4.1	3.6%
30	39.9	32.8%	36.1	30.6%	52.3	39.8%	40.4	38.4%	39.8	35.3%
35	52.6	43.3%	55.5	47.0%	53.5	40.7%	42.8	40.7%	44.0	39.0%
40	19.4	16.0%	15.6	13.2%	14.9	11.3%	11.4	10.8%	18.8	16.7%
50	5.3	4.4%	4.2	3.6%	5.3	4.0%	4.7	4.5%	6.1	5.4%
Pan	T	0.0%	T	0.0%	T	0.0%	0.2	0.2%	T	0.0%
Total	121.5	100.0%	118.1	100.0%	131.4	100.0%	105.1	100.0%	112.8	100.0%
Retained	92.1%		90.8%		91.9%		90.0%		91.0%	

Truck Unit:										
Compartment	1		2		3		4		5	
Sieve Size	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%
16	T	0.0%	T	0.0%	T	0.0%				
20	6.1	4.8%	5.7	4.4%	6.2	4.3%				
30	53.8	42.4%	43.2	33.2%	60.5	41.9%				
35	50.5	39.8%	54.5	41.9%	54.6	37.8%				
40	11.4	9.0%	20.9	16.1%	18.3	12.7%				
50	5.2	4.0%	5.7	4.4%	4.8	3.3%				
Pan	T	0.0%	T	0.0%	T	0.0%				
Total	127.0	100.0%	130.0	100.0%	144.4	100.0%	0.0	0.0%	0.0	0.0%
Retained	91.2%		91.2%		92.4%		0.0%		0.0%	

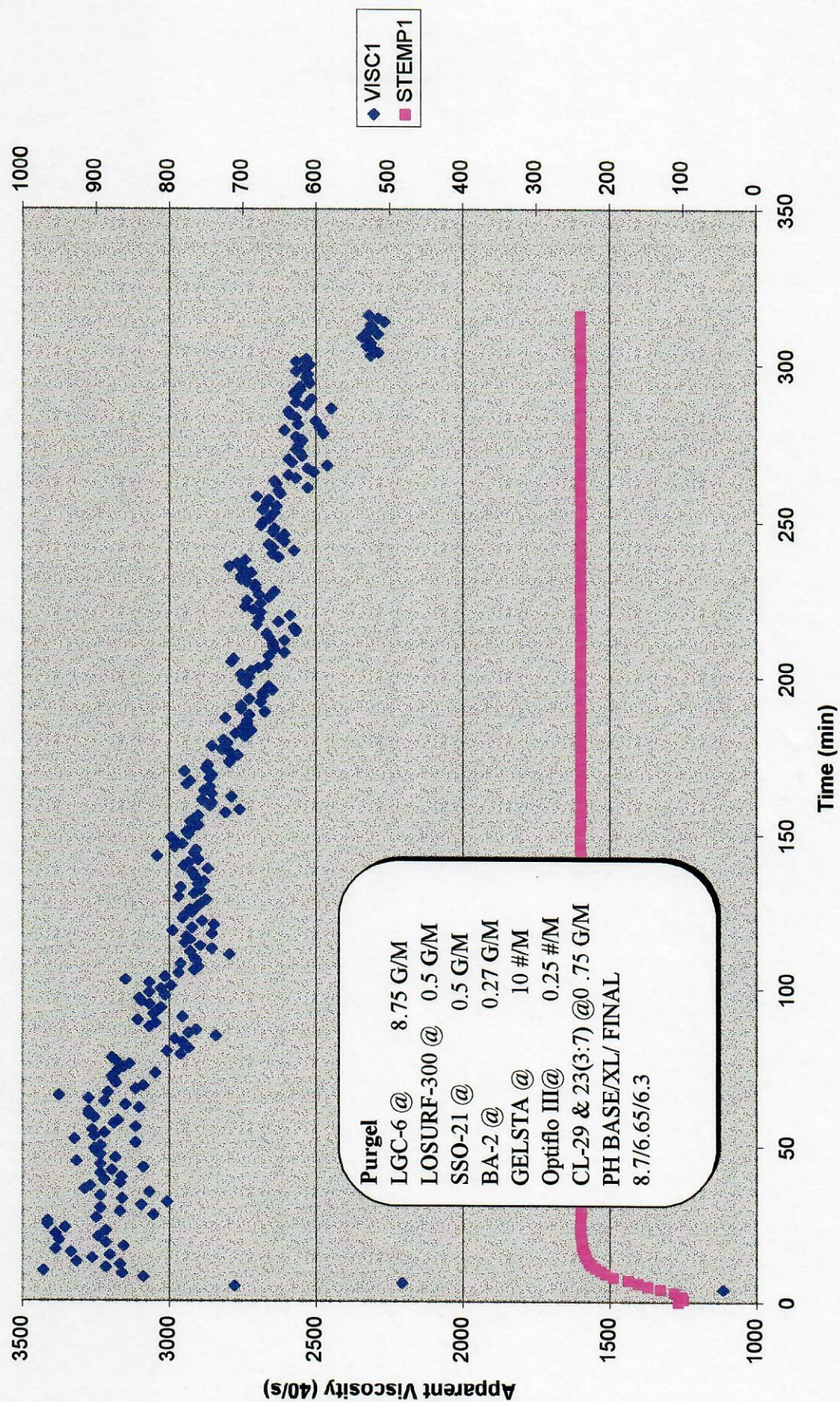


Brighton Co.

Customer:	<u>Top Operating</u>
Formation:	<u>New Codell-Niobrara</u>
Lease:	<u>Tanaka 1-2</u>
Date:	<u>September 30, 1999</u>

[illegible][illegible]

Top Operating-Tanaka 1-2



TREATMENT FLUID SUMMARY

Ticket / OST #:	176530
Company Name:	TOP OPERATING
Lease Name & Number:	TANAKA 1-2
State or Province:	CO
County:	BOULDER COUNTY
Legal Description:	SEC 2, 1N, 69W
API or ERCB Number:	
Formation:	CODEL NIOBRARA
Treatment Date:	9/30/99

Frac Tank Number

		1	2	3	4	5	6	
<u>Water</u>	Initial Strap	0.0	0.0	0.0	0.0	0.0	0.0	INCHES
	Final Strap	1.0	1.0	1.0	1.0	1.0	1.0	INCHES
	Initial Fluid	0.0	0.0	0.0	0.0	0.0	0.0	GALONS
	Final Fluid	50.5	50.5	50.5	50.5	50.5	50.5	GALONS
	Fluid Used	-50.5	-50.5	-50.5	-50.5	-50.5	-50.5	GALONS
	Temperature							F.
	pH							
<u>Base Gel</u>	Viscosity							cp
	pH							
	X-Link Time							Min:Sec
	Break Time							Hr: Min
<u>Oil</u>	Initial Strap							INCHES
	Final Strap							INCHES
	Initial Fluid							GALONS
	Final Fluid							GALONS
	Fluid Used							GALONS
	Temperature							F.
	API Gravity							API

TREATMENT FLUID SUMMARY

		Frac Tank Number						
		7	8	9				
<u>Water</u>	Initial Strap	0.0	0.0	0.0				INCHES
	Final Strap	61.0	1.0	48.0				INCHES
	Initial Fluid	0.0	0.0	0.0				GALONS
	Final Fluid	10013.0	50.5	7304.0				GALONS
	Fluid Used	-10013.0	-50.5	-7304.0				GALONS
	Temperature		60.0					F.
	pH							
<u>Base Gel</u>	Viscosity		33.0					cp
	pH		6.9					
	X-Link Time		1:35					Min:Sec
	Break Time		0:40					Hr: Min
<u>Oil</u>	Initial Strap							INCHES
	Final Strap							INCHES
	Initial Fluid							GALONS
	Final Fluid							GALONS
	Fluid Used							GALONS
	Temperature							F.
	API Gravity							API

		Fluid Totals	
<u>Water</u>	Initial Fluid	0.0	GALONS
	Final Fluid	17670.5	GALONS
	Fluid Used	-17670.5	GALONS
<u>Oil</u>	Initial Fluid	0.0	GALONS
	Final Fluid	0.0	GALONS
	Fluid Used	0.0	GALONS

		Composite Gel	
Viscosity	0.0	cp	
pH	0.0		
Temperature	0.0	F.	
X-Link Time	0:00	Min:Sec	
Break Time	0:00	Hr:Min	

Residue in Tanks: None

Valves and Connections Function Properly? - Yes

ADDITIVE VOLUME SUMMARY

Ticket / OST #:	176530
Company Name:	TOP OPERATING
Lease Name & Number:	TANAKA 1-2
State or Province:	CO
County:	BOULDER COUNTY
Legal Description:	SEC 2, 1N, 69W
API or ERCB Number:	
Formation:	CODEL NIOBRARA
Treatment Date:	9/30/99

Description	Additive	Beginning	Ending	Used	Designed	Units
Biocides	BE-5	42.0	.0	42.0	42.0	lb
Breakers	GBW-3	49.0	15.0	34.0	34.0	lbs
Breakers	OPTIFLO-III	87.0	53.0	34.0	35.0	lb
Breakers	OPTIFLO-II	51.0	39.0	12.0	12.0	lb
Breakers	SP BREAKER	45.0	19.0	26.0	21.0	lb
Buffers	BA-2	100.0	100.0	.0	407.0	lbs
Buffers	BA-20	90.0	90.0	.0	.0	gal
Clay Control Agents	CLAYFIX II	340.0	60.0	280.0	283.0	gal
Cross-Linking Agents	CL23-29 -60-40	186.0	90.0	96.0	102.0	gal
Miscellaneous Chemicals	GEL-STA	650.0	250.0	400.0	605.0	lb
Surfactants	LOSURF-300	336.0	262.0	74.0	68.0	gals
Surfactants	SSO-21M	155.0	88.0	67.0	68.0	gals

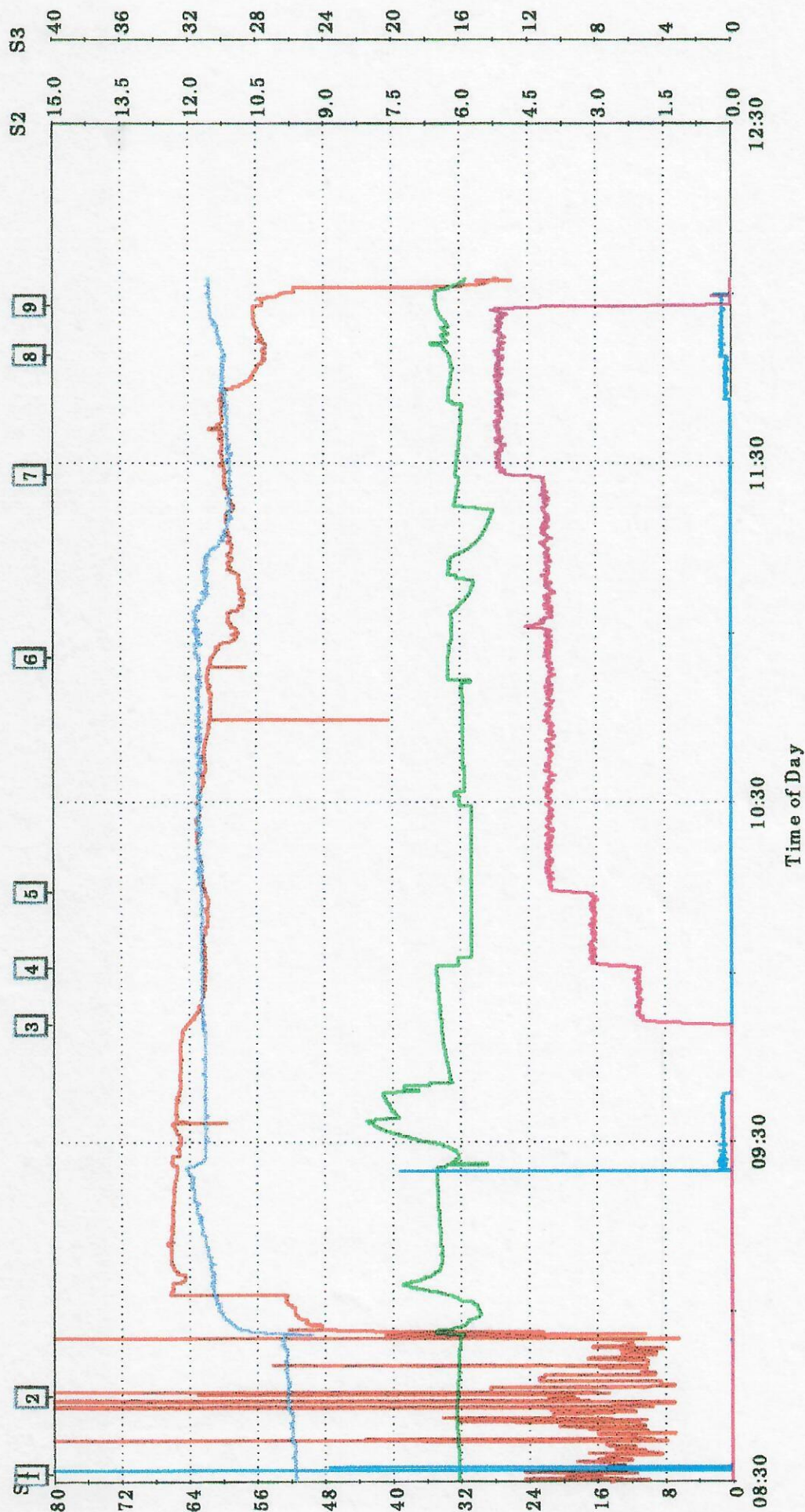
Beginning - Total volume of additive on location prior to starting the treatment.

Ending - Total volume of additive on location at the end of treatment.

Used - Difference between beginning and ending volumes.

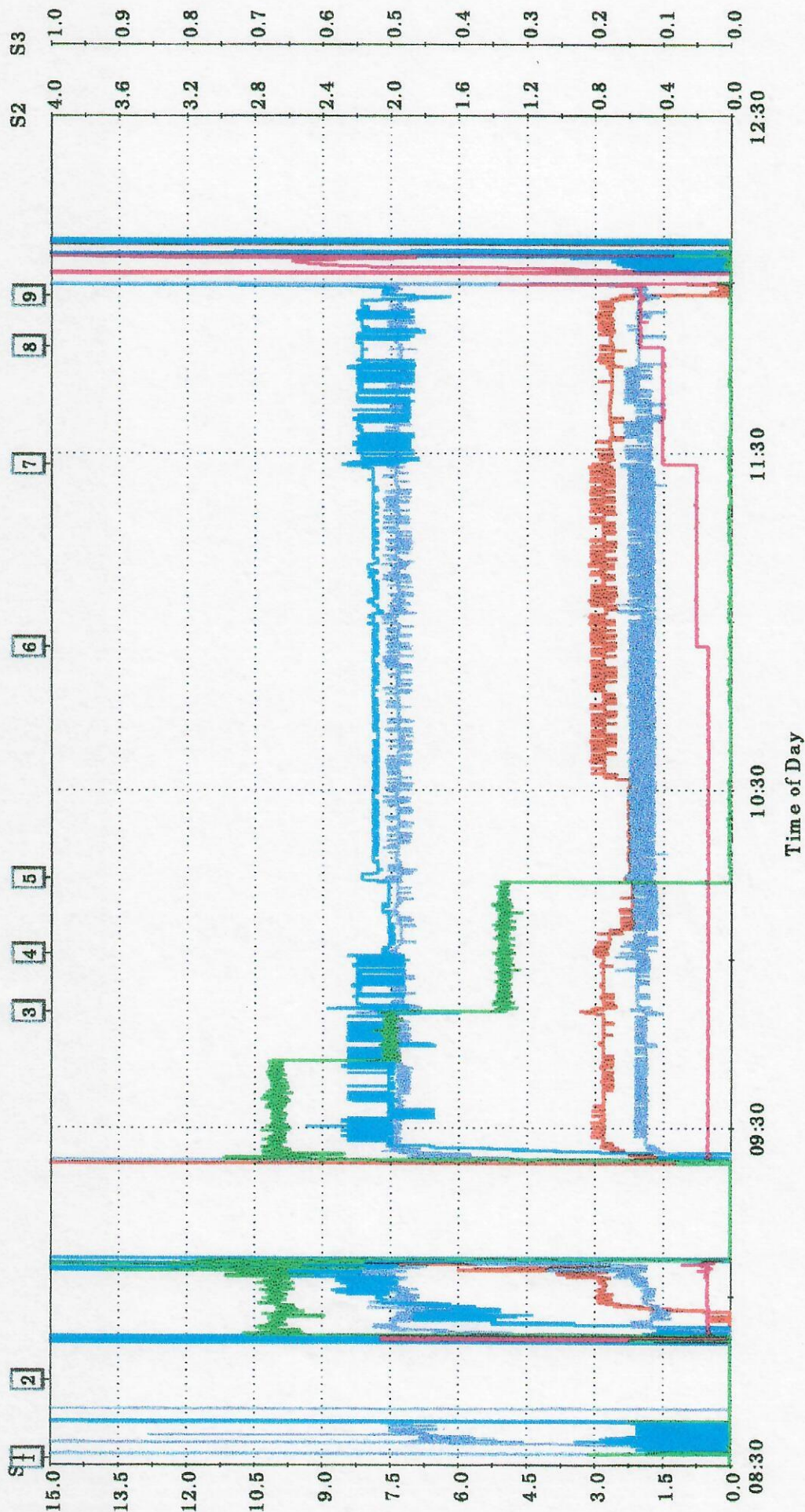
Designed - Total volume of additive based on the treatment design.

RHEOLOGY PLOT



CUSTOMER: HS RESOURCES
 WELL DESC: WARDELL UPRR 41-19 #6
 TICKET: 460170
 DATE: Thu 30-Sep-99
 FORMATION: CODELL REFRACTURE

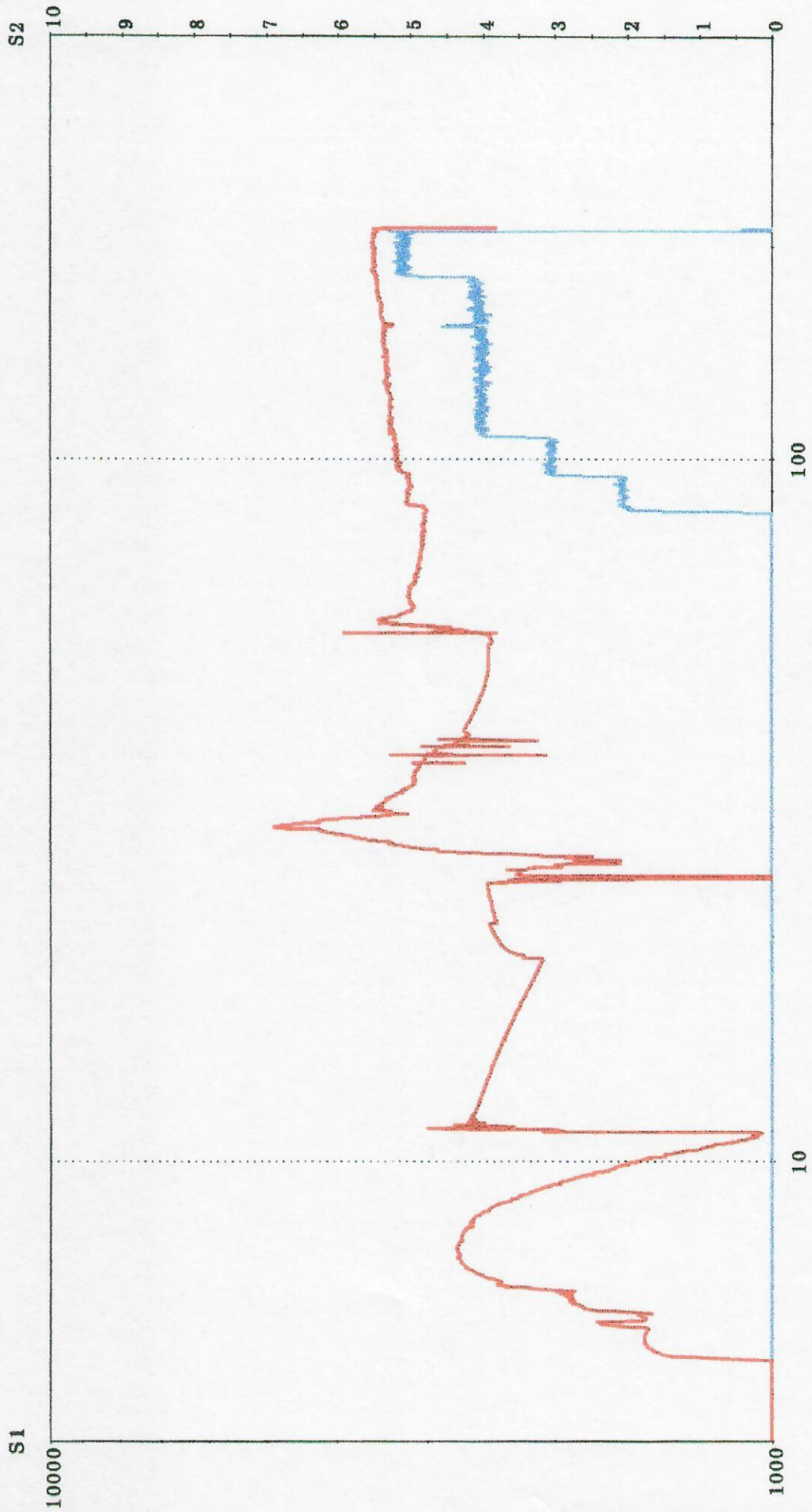
CHEMICAL PLOT



CUSTOMER: HS RESOURCES
WELL DESC: WARDELL UPRR 41-19 #6
TICKET: 460170
DATE: Thu 30-Sep-99
FORMATION: CODELL REFRACTURE

NET PLOT

— S1: Calc'd BH Pressure - 3500 (psi) — S2: Proppant Conc (lb/gal)



Delta Time (min) since 08:26:38

CUSTOMER: HS RESOURCES
WELL DESC: WARDELL UPRR 41-19 #6
TICKET: 460170
DATE: Thu 30-Sep-99
FORMATION: CODELL REFRACTURE

Call for Customer Service

Company Top Operating Date 9/30/99

Contractor _____ County Weld Town _____ Field Wattenburg

Lease Tanaka Well # #1-2 API # _____ Sec. 2 Twp. 1N Rng. 69W

Directions Hwy 52 West to Boulder County Rd 1, On West to 115th Str., South 1 mile, East & North to location.



Job Type Primagel PBTD _____

Formation Name Codell / Niobrara BHST 250 Packer 7400?

Tubing 2 7/8 Casing 4 1/2 RBP _____

Perforations 7465-7635 Flange _____

HHP 4000	BLENDER 2	ANNULUS TRK Yes
BALL INJECTOR	ISOLATION TOOL	CSG POP OFF 1
N2 OR CO2	TOT. TONS-SCF	MT. MOVER 2
BPM 14	PSI	MAX 7000
TREATMENT COLUMN		
TBG 2 7/8	CSG	ANN

Treat. Fluid Primagel DENSITY 35 lb

Displ. Fluid _____ DENSITY _____

Prop. Type _____ SIZE _____ LBS _____

Prop. Type Bulk Sand SIZE 20/40 LBS 400,000

Prop. Type _____ SIZE _____ LBS _____

Proppant _____ Lbs @ _____ /1000

Surfactant LoSurf-300 Gal 80 @ 0.5 /1000

Surfactant SSO-21 Gal 80 @ 0.5 /1000

Gelling Agent LGC-6 Gal 1390 @ 8.75 /1000

Breaker Type SP Lbs 30 @ _____ /1000

Breaker Type OptiFlo III Lbs 40 @ _____ /1000

Breaker Type OptiFlo II Lbs 20 @ _____ /1000

Breaker Type Gbw-3 Lbs 40 @ _____ /1000

Crosslinker CL-29 & CL-23 Gal 120 @ 0.75 /1000

Crosslinker _____ Gal @ _____ /1000

Buffer Type BA-2 Lbs 470 @ _____ /1000

Buffer Type BA-20 Gal 100 @ _____ /1000

Bactericide By Customer Lbs @ _____ /1000

Clay Control ClayFix II Gal 330 @ 2 /1000

Stabilizer Gel-Sta Lbs 700 @ 10 /1000

Activator _____ Gal-Lbs @ _____ /1000

Perfpac Balls _____ Qty _____ Size _____ S.G. _____

Other _____

Other _____

ACID DATA

Acid Type _____ % _____ Gal

Acid Type _____ % _____ Gal

Surfactant _____ Gal-Lbs @ _____ /1000

Ne Agent _____ Gal-Lbs @ _____ /1000

Clay Control _____ Gal-Lbs @ _____ /1000

Corrosion Inhibitor _____ Gal-Lbs @ _____ /1000

Corrosion Inhibitor _____ Gal-Lbs @ _____ /1000

Cracking Inhibitor _____ Gal-Lbs @ _____ /1000

Iron Sequester _____ Gal-Lbs @ _____ /1000

Friction Reducer _____ Gal-Lbs @ _____ /1000

Mix CI-23 & CI-29 @ (7:3)

BREAKER SCHEDULE

ORDERED BY Andy Peterson

CALL TAKEN BY Brighton Engineering Dept.

CREW CALLED Al Laubsch

DATE OF JOB 9/30/99

TIME READY 800

THIS MEMORANDUM

Is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of receipt by the carrier of the property described in the Original Bill of Lading.

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier or corporation in possession of the property under the contract, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIP		UNIMIN CORPORATION		BRIGHTON		
O.		AGENT'S NO.	CUSTOMER ORDER NO.	OUR ORDER NO.	SHIP DATE	SHIP VIA
0006217			pc45001 65588	052-0001018	9-29-99	TK-FNT
CONSIGNEE TO		HALLIBURTON ENERGY SERVICES, BOX 459				
DESTINATION		BRIGHTON				
CARRIER		CUSTOMER TRUCK				
ROUTE		STATE CO 80601 COUNTY ADAMS				
DELIVERING CARRIER		VEHICLE OR CAR INITIAL & NO. B.n.3				

Qty. Ordered	UOM	Kind of Package, Description of Articles, Special Marks and Exceptions	No. of Packages	HM	*Weight (Subject to Correction)	Class or Rate	Chet Color
	1 TL	UNIFRAC 20/40-BULK					

GR 50394340

SHIPPER'S SPECIAL INSTRUCTIONS:

GROSS	77400
TARE	31100
NET	46300

HORTON FEEDLOTS, INC.

2602 WCR 27
Fort Lupton, Colorado 80601
Phone (303) 659-1000

NO. 78283
23.15

Vehicle or PURCHASED FROM Uniman

DATE 9 29 99

SOLD TO

COMMODITY

CARRIER Doty 40

% MOISTURE

07:30 AM 09-29-99 77400 lb GR

BCFM

06:54 AM 09-29-99 31100 lb TA

BUSHEL WT.

\$ PRICE PER

†This is to be
applicable regl.
*If the shipper
† Shipper's im
NOTE---Where
The agreed or

TOTAL LBS. NET

46300

DRIVER ON OFF X

WEIGHER TL

IMPORTANT

READ HEALTH HAZARD WARNING BELOW

SHIPPER UNIMIN CORPORATION PER

AGENT PER

250 Elm Street
New Canaan, CT 06840
(203) 966-8888

HEALTH HAZARD WARNING: CONTAINS FREE SILICA. DO NOT BREATHE DUST - Prolonged inhalation can cause delayed lung injury including SILICOSIS, a progressive, disabling and sometimes fatal lung disease. IARC has determined that crystalline and microcrystalline silica inhaled from occupational sources can cause cancer in humans. Risk of injury is dependent on the duration and level of exposure.
Do not use as a dry abrasive blasting agent. Follow OSHA or other relevant safety and health standards for the form of crystalline silica called quartz. Current material safety data sheet containing safety information is available and should be consulted before opening. Since empty containers retain product residue, follow label warnings even after container is empty.

is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of receipt by the carrier of the property described in the Original Bill of Lading.

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of receipt by the carrier of the property described in the Original Bill of Lading, that the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated, is being received by the carrier (the word "carrier" being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery and to deliver to the consignee, at the place and time interested in all or any of said property, that every service to be performed hereunder shall be subject to the terms and conditions of the Uniform Domestic Shipper's Bill of Lading, as amended, and to the applicable motor carrier classification or tariff which governs the transportation of this shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

UNIMIN CORPORATION		BRIGHTON	
SHIPPER'S NO.	AGENT'S NO.	CUSTOMER ORDER NO.	OUR ORDER NO.
000621A		PC45001 65588	052-000101A
SHIP DATE		SHIP VIA	
9-29-99		TK-PNT	
CONSIGNEE TO		HALLIBURTON ENERGY SERVICES, BOX 459	
DESTINATION		BRIGHTON	
CARRIER		CUSTOMER TRUCK	
ROUTE		STATE CO 00601 COUNTY ADAMS	
DELIVERING CARRIER		ICC CONTRACT NO.	
		VEHICLE OR CAR INITIAL & NO. Bin 3	

Qty. Ordered	UOM	Kind of Package, Description of Articles, Special Marks and Exceptions	No. of Packages	HM	*Weight (Subject to Correction)	Class or Rate	Ch Co
	1 TL	UNIFRAC 20/40-BULK					

UPPER'S SPECIAL INSTRUCTIONS:

GROSS	77600		
TARE	30100		
NET	47500		

Subject to Section 7 of conditions applicable bill of lading, if this ship the consignee with signor, the cons statement: not make de ut payment of + pas.

Arthur's
BRIGHTON GRAIN CO.

404 N. Main St. • Brighton, CO 80601 • (303) 659-3247

Vehic

23.75

Spot 29,91

DATE _____

Customer Name

Address

Special Instructions

MATERIAL *QMS*

7700 is Gross

450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1

100

Truck Number

Driver

Weigher

† This is applicable
* If the shipper
† Shipper
NOTE---
The agree

REPORT
RE

RECEIVED BY

TIME AND DATE OF DELIVERY _____

AGENT

PER

New Canaan, CT 06840

12-1-5000

HEALTH HAZARD WARNING: CONTAINS FREE SILICA. DO NOT BREATHE DUST - Prolonged inhalation can cause delayed lung injury including SILICOSIS, a progressive, disabling and sometimes fatal lung disease. IARC has determined that crystalline and microcrystalline silica inhaled from occupational sources can cause cancer in humans. Risk of injury is dependent on the duration and level of exposure.

Do not use as a dry abrasive blasting agent. Follow OSHA or other relevant safety and health standards for the form of crystalline silica called quartz. Current material safety data sheet containing safety information is available and should be consulted before opening. Since empty containers retain product residue, follow label warnings even after container is empty.

THIS MEMORANDUM

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of receipt by the carrier of the property described in the Original Bill of Lading, nor is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being used as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to, agreed, as to each carrier of all or any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification, motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading set forth in the classification or tariff which governs the transportation of this shipment, and the said terms hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER'S NO. 0006219		AGENT'S NO.	CUSTOMER ORDER NO. OC4500165588	BRIGHTON		SHIP DATE 9-29-99	SHIP VIA TRK-F
UNILMIN CORPORATION		HALLIBURTON ENERGY SERVICES, BOX 459		STATE CO	COUNTY ADAMS		
CONSIGNEE TO BRIGHTON		VEHICLE OR CAR INITIAL & NO. Bin 3					
CARRIER CUSTOMER TRUCK		No. of Packages		HM	*Weight (Subject to Correction)	Class or Rate	
ROUTE		Kind of Package, Description of Articles, Special Marks and Exceptions					
DELIVERING CARRIER		Qty. Ordered					
UOM		1 TL		UNIFRAC 20/40-BULK			
SHIPPER'S SPECIAL INSTRUCTIONS:		GROSS		82460			
		TARE		31020			
		NET		51440			

HORTON FEEDLOTS, INC.
2602 WCR 27
Fort Lupton, Colorado 80601
Phone (303) 659-1000

PURCHASED FROM *Unimin*

SOLD TO

COMMODITY

CARRIER *Deley 40*

10:59 AM 09-29-99

10:35 AM 09-29-99

82460 lb GR

31020 lb TA

% MOISTURE

BCFM

BUSHEL WT.

\$

PRICE PER

DRIVER

ON OF

WEIGHER

TOTAL LBS. NET **51440**

RECEIVED BY
TIME AND DATE OF DELIVERY

AGENT

PER

HEALTH HAZARD WARNING: CONTAINS FREE SILICA. DO NOT BREATHE DUST - Prolonged inhalation can cause silicosis, a progressive, disabling and sometimes fatal lung disease. IARC has determined that crystalline and microcrystalline silica in the form of dust or fume is a known human carcinogen. Risk of injury is dependent on the duration and level of exposure. Follow OSHA or other relevant safety and health standards for the form of crystalline silica. If information is available and should be consulted before opening. Since empty containers retain product.

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RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of receipt by the carrier of the property described in the Original Bill of Lading. the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination. It is mutually agreed, as to each carrier of all or any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

FROM SHIP		UNIMIN CORPORATION		A T BRIGHTON	
SHIP		AGENT'S NO.	CUSTOMER ORDER NO.	OUR ORDER NO.	SHIP DATE
0006220			DC4500165588	052-0001018	9-29-99
CONSIGNEE TO		HALLIBURTON ENERGY SERVICES, BOX 459			
DESTINATION		BRIGHTON			
CARRIER		CUSTOMER TRUCK			
ROUTE		STATE CO 80601 COUNTY ADAMS			
DELIVERING CARRIER		ICC CONTRACT NO.			
		VEHICLE OR CAR INITIAL & NO. <i>Bm 3</i>			

Qty. Ordered	UOM	Kind of Package, Description of Articles, Special Marks and Exceptions	No. of Packages	HM	*Weight (Subject to Correction)	Class or Rate	Chet Color
1	TL	UNIFRAC 20/40-BULK					

SHIPPER'S SPECIAL INSTRUCTIONS:

GROSS	86940
TARE	31640
NET	55300

Arthur's
BRIGHTON GRAIN CO.

404 N. Main St. • Brighton, CO 80601 • (303) 659-3247

27.65

Sept 29, 99

DATE

Vehicle

Customer Name *Unimin*

Address

Special Instructions

MATERIAL *SANDS*

86940 lb Gross
31640 lb Net
55300 lb Tare

Truck Number *38*

Driver *GA*

Weigher *BW*

†This is to
applicable re
*If the shipm
† Shipper's i
NOTE---Wh
The agreed

IMPORTANT

READ

RECE

TIME AND DATE
OF DELIVERY

SHIPPER UNIMIN CORPORATION PER

AGENT PER

200 E 1st Street
New Canaan, CT 06840
(203) 966-0000

of conditions of
if this shipment
consignee without
or, the consignor
ment:
make delivery
payment of freight

(signor.)
prepaid, write or

of the charges
are on.

hier.

acknowledges only

need:

HEALTH HAZARD WARNING: CONTAINS FREE SILICA. DO NOT BREATHE DUST - Prolonged inhalation can cause delayed lung injury including SILICOSIS, a progressive, disabling and sometimes fatal lung disease. IARC has determined that crystalline and microcrystalline silica inhaled from occupational sources can cause cancer in humans. Risk of injury is dependent on the duration and level of exposure. Do not use as a dry abrasive blasting agent. Follow OSHA or other relevant safety and health standards for the form of crystalline silica called quartz. Current material safety data sheet containing safety information is available and should be consulted before opening. Since empty containers retain product residue, follow label warnings even after container is empty.

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FROM SHIP		UNIMIN CORPORATION		A T BRIGHTON	
O.	AGENT'S NO.	CUSTOMER ORDER NO.		OUR ORDER NO.	SHIP DATE
0006221		PC45001 105588		052-000101A	9-29-99
					SHIP VIA TK-FNT

CONSIGNEE TO	HALLIBURTON ENERGY SERVICES, BOX 459				
DESTINATION	BRIGHTON				
CARRIER	CUSTOMER TRUCK				
ROUTE					
DELIVERING CARRIER	VEHICLE OR CAR INITIAL & NO. <u>B.103</u>				
	STATE	CO 80601	COUNTY	ADAMS	
	ICC CONTRACT NO.				

Qty. Ordered	UOM	Kind of Package, Description of Articles, Special Marks and Exceptions	No. of Packages	HM	*Weight (Subject to Correction)	Class or Rate	Chc Color
1	TL	UNIFRAC 20/40-BULK					

SHIPPER'S SPECIAL INSTRUCTIONS:					GROSS	84680		
					TARE	31740		
					NET	52940		

HORTON FEEDLOTS, INC.

2602 WCR 27
Fort Lupton, Colorado 80601
Phone (303) 659-1000

PURCHASED FROM Uniman

SOLD TO

COMMODITY

CARRIER Daly 38

NO. 78289
29.62

DATE 9-29-99

11:05 AM 09-29-99 84680 lb GR

10:40 AM 09-29-99 31740 lb TA

% MOISTURE

BCFM

BUSHEL WT.

\$ PRICE PER

DRIVER ON OFF 10

WEIGHER JK

TOTAL LBS. NET 52940

READ HEALTH HAZARD WARNING BELOW RECEIVED <u>1300 Uniman</u>	SHIPPER UNIMIN CORPORATION	PER	250 Elm Street New Canaan, CT 06840 (203) 966-8880
TIME AND DATE OF DELIVERY	AGENT	PER	

HEALTH HAZARD WARNING: CONTAINS FREE SILICA. DO NOT BREATHE DUST - Prolonged inhalation can cause delayed lung injury including SILICOSIS, a progressive, disabling and sometimes fatal lung disease. IARC has determined that crystalline and microcrystalline silica inhaled from occupational sources can cause cancer in humans. Risk of injury is dependent on the duration and level of exposure. Do not use as a dry abrasive blasting agent. Follow OSHA or other relevant safety and health standards for the form of crystalline silica called quartz. Current material safety data sheet containing safety information is available and should be consulted before opening. Since empty containers retain product residue, follow label warnings even after container is empty.

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FROM SHIPPER		UNIMIN CORPORATION		A T BRIGHTON	
VO.	AGENT'S NO.	CUSTOMER ORDER NO.	OUR ORDER NO.	SHIP DATE	SHIP VIA
0006222		0045001 65508	052-000101A	9-29-99	TK-ANT
CONSIGNEE TO HALLIBURTON ENERGY SERVICES, BOX 459					
DESTINATION BRIGHTON			STATE CO 80601 COUNTY ADAMS		
CARRIER CUSTOMER TRUCK			ICC CONTRACT NO.		
ROUTE					
DELIVERING CARRIER			VEHICLE OR CAR INITIAL & NO. Pin 3		

Qty. Ordered	UOM	Kind of Package, Description of Articles, Special Marks and Exceptions	No. of Packages	HM	*Weight (Subject to Correction)	Class or Rate	Chg Colu
	1 TL	UNIFRAC 20/40-BULK					

SHIPPER'S SPECIAL INSTRUCTIONS:

GROSS	24140
TARE	30460
NET	53480

Arthur's
BRIGHTON GRAIN CO.

404 N. Main St. • Brighton, CO 80601 • (303) 659-3247

Vehicle

Customer Name Unimin
Address _____
Special Instructions _____

MATERIAL SAND

24140 lb Gross
30460 lb Net
53480 lb Tare

26.84
DATE Sept 29, 99

of conditions of
this shipment
consignee without
nor, the consignee
payment of freight
s.

Signature
prepaid, write on

Amount of the charges
hereon.

Signature
acknowledges only
dated:

†This is to
be applicable
if the shipper
† Shipper
NOTE---W
The agree

READ HEALTH HAZARD WARNING BELOW		SHIPPER UNIMIN CORPORATION		PER	
TIME AND DATE OF DELIVERY		AGENT		PER	

255 Elm Street
New Canaan, CT 06840
(203) 966-0000

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SHIPPER'S NO. 0006227		AGENT'S NO.	CUSTOMER ORDER NO. PC45001 105588	OUR ORDER NO. 052-0001018	SHIP DATE 9-29-99	SHIP VIA TR-FNT
CONSIGNEE TO HALLIBURTON ENERGY SERVICES, BOX 459				STATE CO 80601	COUNTY ADAMS	
DESTINATION BRIGHTON				ICC CONTRACT NO.		
CARRIER CUSTOMER TRUCK				VEHICLE OR CAR INITIAL & NO. 13143		
ROUTE						
DELIVERING CARRIER						

Qty. Ordered	UOM	Kind of Package, Description of Articles, Special Marks and Exceptions	No. of Packages	HM	*Weight (Subject to Correction)	Class or Rate
1	TL	UNIFRAC 20/40-BULK				

SHIPPER'S SPECIAL INSTRUCTIONS:

GROSS	62600
TARE	30660
NET	51940

HORTON FEEDLOTS, INC.
2602 WCR 27
Fort Lupton, Colorado 80601
Phone (303) 659-1000

NO. **78285**
25.97

DATE **9/29/99**

Vehic PURCHASED FROM **Unimim**

SOLD TO

COMMODITY

CARRIER **loty 4/4**

07:25 AM 09-29-99

82600 1b GR

07:08 AM 09-29-99

30660 1b TA

% MOISTURE

BCFM

BUSHEL WT.

\$ PRICE PER

DRIVER ON OFF

WEIGHER

†This is applicab
*If the sr
† Shipper
NOTE---
The agr

TOTAL LBS. NET **51940**

IMPORTA

READ HEALTH HAZARD WARNING BELOW

SHIPPER

UNIMIM CORPORATION

PER

RECEIVED BY

AGENT

PER

253 Elm Street
New Canaan, CT 06840
(203) 366-8888

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SHIP		UNIMIN CORPORATION		BRIGHTON	
SHIP	O.	AGENT'S NO.	CUSTOMER ORDER NO.	OUR ORDER NO.	SHIP DATE
	0000224		PC45001 105588	053-000101A	9-29-99
CONSIGNEE TO			HALLIBURTON ENERGY SERVICES, BOX 459		
DESTINATION			BRIGHTON		
CARRIER			CUSTOMER TRUCK		
ROUTE			STATE CO 80601 COUNTY ADAMS		
DELIVERING CARRIER			ICC CONTRACT NO.		
			VEHICLE OR CAR INITIAL & NO.		

Qty. Ordered	UOM	Kind of Package, Description of Articles, Special Marks and Exceptions	No. of Packages	HM	*Weight (Subject to Correction)	Class or Rate	Chc Color
1	TL	UNIFRAC 20/40-BULK					

SHIPPER'S SPECIAL INSTRUCTIONS:

GROSS	75120
TARE	31740
NET	43380

HORTON FEEDLOTS, INC.

2602 WCR 27

Fort Lupton, Colorado 80601

Phone (303) 659-1000

Vehicle o

PURCHASED FROM

SOLD TO

COMMODITY

CARRIER

07:20 AM 09-29-99

75120 lb GR

06:53 AM 09-29-99

31740 lb TA

% MOISTURE

BCFM

BUSHEL WT.

\$ PRICE PER

DRIVER ON OFF

WEIGHER

NO. 78282

21.69

DATE 9-29-99

TOTAL LBS. NET

43380

IMPORTANT

READ HEALTH HAZARD WARNING BELOW

SHIPPER UNIMIN CORPORATION PER

AGENT PER

350 Elm Street
New Canaan, CT 06840
(203) 966-0000

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Customer:	HS RESOURCES	Date:	30-Sep-1999
Well Desc.:	41-19 #6	Ticket #:	460170
Formation:	CODELL REFRACTURE	Job Type:	OPTIFRAC-LITE

Time of Day	Skid 2 Viscosity	Stage Clean Vol	Stage Slurry Vol	Job Clean Vol	Job Slurry Vol	Stage Proppant Pumped sack	Job Proppant Pumped sack
	cp	gal	gal	gal	gal		
08:26:38	0.00	0.0	0.0	0.0	0.0	0.0	0.0
08:26:38	Start Job						
08:27:38	4.73	10.3	10.4	10.3	10.4	0.0	0.0
08:28:38	5.88	15.4	15.5	15.4	15.5	0.0	0.0
08:29:38	7.23	22.2	22.2	22.2	22.2	0.0	0.0
08:30:38	6.48	29.9	30.0	29.9	30.0	0.0	0.0
08:31:22	Stage Change 1 - LOAD & BREAK						
08:31:38	12.19	1.0	1.0	1.0	1.0	0.0	0.0
08:32:38	5.15	38.3	41.9	38.3	41.9	0.0	0.0
08:33:38	6.91	413.1	296.0	413.1	296.0	0.0	0.0
08:34:38	6.92	712.5	609.5	712.5	609.5	0.0	0.0
08:35:38	5.14	1130.5	1004.4	1130.5	1004.4	0.0	0.0
08:36:38	6.93	1553.8	1414.4	1553.8	1414.4	0.0	0.0
08:37:38	21.58	1968.5	1825.9	1968.5	1825.9	0.0	0.0
08:38:38	3.37	2046.0	1860.6	2046.0	1860.6	0.0	0.0
08:39:16	ISDP @ 2853 PSI						
08:39:38	8.45	2046.0	1860.6	2046.0	1860.6	0.0	0.0
08:40:38	5.52	2046.0	1860.6	2046.0	1860.6	0.0	0.0
08:41:38	10.56	2046.8	1861.4	2046.8	1861.4	0.0	0.0
08:42:38	8.21	2046.8	1861.4	2046.8	1861.4	0.0	0.0
08:43:38	7.10	2046.8	1861.4	2046.8	1861.4	0.0	0.0
08:44:38	9.67	2046.8	1861.4	2046.8	1861.4	0.0	0.0
08:45:15	Stage Change 2 - PAD						
08:45:33	WAIT ON RIG TO FIX LEAK						
08:45:38	9.91	0.0	0.0	2046.9	1861.5	0.0	0.0
08:46:20	START SPEARHEADING 500 GALS. 15% ACID						
08:46:38	14.23	0.0	0.0	2046.9	1861.5	0.0	0.0
08:47:38	4.20	0.0	0.0	2046.9	1861.5	0.0	0.0
08:48:38	11.36	0.0	0.0	2046.9	1861.5	0.0	0.0
08:49:38	5.10	0.1	0.1	2047.0	1861.6	0.0	0.0
08:50:38	5.24	0.1	0.1	2047.0	1861.6	0.0	0.0
08:51:38	4.98	0.1	0.1	2047.0	1861.6	0.0	0.0
08:52:38	4.52	54.1	94.1	2101.0	1955.6	0.0	0.0
08:53:37	START PRE PAD, NO CROSSLINKER TO START						
08:53:38	4.05	207.2	291.3	2254.1	2152.8	0.0	0.0
08:54:38	6.16	744.7	779.5	2791.6	2641.0	0.0	0.0
08:55:38	9.04	1259.5	1290.4	3306.4	3151.9	0.0	0.0
08:56:38	21.09	1773.8	1819.1	3820.7	3680.6	0.0	0.0
08:57:38	24.11	2423.3	2475.6	4470.1	4337.1	0.0	0.0
08:58:38	24.97	3315.2	3364.1	5362.1	5225.6	0.0	0.0
08:58:52	START CROSSLINKER @ .75- 5200 GALS. CLEAN						
08:59:38	25.60	4270.7	4300.2	6317.5	6161.7	0.0	0.0
09:00:38	25.70	5200.9	5228.9	7247.8	7090.4	0.0	0.0
09:01:38	26.12	6146.1	6173.6	8193.0	8035.1	0.0	0.0
09:02:38	26.27	7103.8	7116.5	9150.7	8978.0	0.0	0.0
09:03:31	START REVERSE STEP RATE						
09:03:38	33.03	8054.7	8048.0	10101.6	9909.4	0.0	0.0
09:04:38	32.90	8791.7	8777.2	10838.6	10638.7	0.0	0.0
09:05:38	32.29	9167.2	9149.0	11214.0	11010.5	0.0	0.0
09:06:38	32.20	9353.0	9341.8	11399.9	11203.3	0.0	0.0
09:07:27	ISDP @ 3005 PSI						
09:07:38	32.83	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:08:38	33.02	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:09:38	32.97	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:10:38	33.03	9353.4	9342.2	11400.3	11203.7	0.0	0.0

Time of Day	Skid 2 Viscosity	Stage Clean Vol	Stage Slurry Vol	Job Clean Vol	Job Slurry Vol	Stage Proppant Pumped sack	Job Proppant Pumped sack
	cp	gal	gal	gal	gal		
09:11:38	33.01	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:12:38	32.98	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:13:38	32.96	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:14:38	33.01	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:15:38	32.95	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:16:38	32.93	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:17:38	32.93	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:18:38	32.91	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:19:38	32.88	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:20:38	32.86	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:21:38	32.82	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:22:38	32.80	9353.4	9342.2	11400.3	11203.7	0.0	0.0
09:23:38	32.75	9372.4	9361.1	11419.3	11222.6	0.0	0.0
09:24:38	32.66	9745.2	9665.5	11792.1	11527.0	0.0	0.0
09:25:38	32.66	10430.6	10353.8	12477.5	12215.3	0.0	0.0
09:26:38	33.01	11384.3	11275.9	13431.2	13137.4	0.0	0.0
09:27:38	32.91	12332.6	12217.2	14379.5	14078.7	0.0	0.0
09:28:38	32.49	13284.0	13160.2	15330.9	15021.7	0.0	0.0
09:29:38	32.50	14235.6	14104.2	16282.5	15965.7	0.0	0.0
09:30:38	32.45	15190.4	15048.0	17237.3	16909.4	0.0	0.0
09:31:38	32.62	16139.1	15987.9	18186.0	17849.4	0.0	0.0
09:32:38	32.82	17092.3	16930.2	19139.2	18791.7	0.0	0.0
09:33:38	32.10	18045.1	17872.3	20092.0	19733.8	0.0	0.0
09:34:38	32.63	18998.5	18817.1	21045.3	20678.6	0.0	0.0
09:35:38	32.70	19954.9	19761.3	22001.8	21622.8	0.0	0.0
09:36:38	32.69	20903.9	20701.2	22950.8	22562.7	0.0	0.0
09:37:38	32.70	21854.8	21641.0	23901.7	23502.5	0.0	0.0
09:38:38	32.52	22803.4	22580.8	24850.3	24442.3	0.0	0.0
09:39:38	32.46	23753.4	23522.2	25800.3	25383.7	0.0	0.0
09:40:38	32.45	24704.1	24462.2	26750.9	26323.7	0.0	0.0
09:41:38	32.45	25654.5	25404.7	27701.4	27266.2	0.0	0.0
09:42:19	CUT GEL-LOADING TO 7.5 LB/1000						0.0
09:42:38	32.44	26605.6	26347.7	28652.5	28209.2	0.0	0.0
09:43:38	32.40	27555.0	27291.4	29601.9	29152.9	0.0	0.0
09:44:38	32.41	28504.5	28234.1	30551.4	30095.6	0.0	0.0
09:45:38	32.40	29447.4	29174.9	31494.3	31036.4	0.0	0.0
09:46:38	32.41	30396.2	30119.7	32443.1	31981.2	0.0	0.0
09:47:38	32.42	31344.6	31065.5	33391.5	32927.0	0.0	0.0
09:48:38	32.35	32294.3	32010.8	34341.3	33872.2	0.0	0.0
09:49:38	32.34	33245.7	32955.9	35292.6	34817.3	0.0	0.0
09:50:38	32.07	34176.1	33900.1	36223.0	35761.6	0.0	0.0
09:50:40	Stage Change 3 - START 2 PPG 20/40 SAND STAGE						
09:51:38	31.89	800.9	916.8	37044.8	36701.9	10.7	10.7
09:52:38	31.55	1678.8	1858.8	37922.7	37643.9	28.0	28.0
09:53:38	31.39	2545.1	2800.1	38789.0	38585.1	45.8	45.8
09:54:38	31.22	3415.2	3743.1	39659.1	39528.2	63.5	63.5
09:55:38	31.10	4284.3	4687.1	40528.2	40472.1	81.0	81.0
09:56:38	31.05	5151.9	5630.7	41395.7	41415.8	98.8	98.8
09:57:38	30.98	6020.3	6575.1	42264.2	42360.1	116.5	116.5
09:58:38	31.05	6889.3	7520.2	43133.2	43305.2	134.3	134.3
09:59:38	31.00	7755.2	8461.8	43999.0	44246.8	152.2	152.2
10:00:38	30.95	8625.5	9402.8	44869.4	45187.8	170.0	170.0
10:01:05	Stage Change 4 - START 3 PPG 20/40 SAND STAGE						
10:01:38	31.01	459.1	525.6	45709.0	46128.8	11.2	188.9
10:02:38	31.01	1279.1	1469.8	46529.0	47073.0	36.3	214.0

Time of Day	Skid 2 Viscosity	Stage Clean Vol	Stage Slurry Vol	Job Clean Vol	Job Slurry Vol	Stage Proppant Pumped sack	Job Proppant Pumped sack
	cp	gal	gal	gal	gal		
10:03:38	30.98	2111.6	2414.3	47361.5	48017.6	61.6	239.3
10:03:51	3 PPG SLF ON PERFS.						
10:04:38	31.02	2946.4	3359.9	48196.3	48963.2	86.9	264.6
10:05:38	31.05	3780.1	4304.6	49030.0	49907.8	112.4	290.2
10:06:38	31.05	4614.6	5249.2	49864.5	50852.5	137.7	315.4
10:07:38	30.96	5443.4	6185.9	50693.4	51789.1	162.7	340.4
10:08:38	30.84	6269.2	7122.2	51519.1	52725.5	187.8	365.5
10:09:38	30.88	7087.7	8058.3	52337.7	53661.6	212.8	390.5
10:10:38	30.84	7913.6	8994.3	53163.5	54597.5	237.7	415.4
10:11:38	30.84	8740.2	9931.0	53990.1	55534.2	262.7	440.4
10:12:38	30.77	9565.4	10867.1	54815.4	56470.3	287.8	465.5
10:13:38	30.92	10390.6	11803.4	55640.6	57406.6	312.6	490.3
10:14:24	Stage Change 5 - START 4 PPG 20/40 SAND STAGE						
10:14:38	30.98	185.0	226.2	56436.9	58342.7	7.1	516.7
10:15:38	31.05	965.3	1163.3	57217.2	59279.8	38.6	548.2
10:16:38	31.12	1770.1	2102.6	58022.0	60219.1	70.3	579.9
10:17:38	31.22	2570.1	3041.2	58822.0	61157.8	102.0	611.7
10:18:38	31.23	3362.2	3979.8	59614.1	62096.4	134.0	643.7
10:19:38	31.23	4157.2	4918.0	60409.1	63034.5	166.0	675.6
10:20:38	31.26	4953.3	5857.4	61205.2	63973.9	197.8	707.4
10:21:38	31.37	5749.6	6797.5	62001.5	64914.1	229.8	739.4
10:22:38	31.38	6546.3	7736.7	62798.2	65853.3	261.7	771.3
10:23:38	31.40	7341.2	8675.4	63593.1	66792.0	293.7	803.3
10:24:38	31.44	8138.8	9614.2	64390.7	67730.8	325.5	835.2
10:25:38	31.36	8934.8	10551.6	65186.7	68668.1	357.2	866.8
10:26:38	31.35	9730.9	11489.0	65982.9	69605.5	389.1	898.7
10:27:38	31.28	10525.9	12426.0	66777.8	70542.6	420.9	930.6
10:28:38	31.31	11319.3	13362.7	67571.2	71479.2	452.6	962.2
10:29:38	31.34	12110.0	14299.3	68361.9	72415.9	484.2	993.8
10:30:38	31.40	12905.2	15236.2	69157.1	73352.8	516.0	1025.6
10:31:38	31.31	13704.1	16174.3	69956.0	74291.0	548.0	1057.6
10:32:38	31.16	14502.7	17112.6	70754.7	75229.3	579.9	1089.5
10:33:38	31.02	15299.9	18049.4	71551.8	76166.2	611.9	1121.5
10:34:38	31.05	16097.9	18986.7	72349.8	77103.5	643.5	1153.1
10:35:38	30.97	16894.0	19923.9	73145.9	78040.8	675.1	1184.7
10:36:38	30.95	17692.5	20861.1	73944.3	78977.9	707.0	1216.6
10:37:38	31.02	18489.7	21799.6	74741.5	79916.5	739.1	1248.7
10:38:38	31.02	19287.8	22738.2	75539.6	80855.1	770.9	1280.5
10:39:38	30.98	20087.7	23676.4	76339.5	81793.3	802.5	1312.1
10:40:38	30.93	20886.5	24614.7	77138.3	82731.6	834.1	1343.7
10:41:38	30.90	21683.6	25553.7	77935.3	83670.5	866.1	1375.7
10:42:38	30.82	22480.3	26490.9	78732.1	84607.7	897.4	1407.0
10:43:38	30.75	23277.7	27427.6	79529.5	85544.5	928.9	1438.5
10:44:38	30.72	24073.9	28364.3	80325.7	86481.2	960.3	1470.0
10:45:38	30.64	24869.7	29301.6	81121.5	87418.4	992.4	1502.0
10:46:38	30.62	25664.9	30238.0	81916.7	88354.8	1024.4	1534.0
10:47:38	30.67	26458.1	31176.9	82709.9	89293.7	1056.2	1565.8
10:48:38	30.66	27250.3	32114.9	83502.0	90231.7	1087.9	1597.5
10:49:38	30.60	28044.7	33053.8	84296.5	91170.6	1119.8	1629.5
10:50:38	30.77	28841.1	33992.8	85092.9	92109.6	1151.6	1661.3
10:51:38	30.85	29639.3	34931.7	85891.1	93048.5	1183.5	1693.1
10:52:38	30.85	30435.8	35870.2	86687.6	93987.0	1215.4	1725.0
10:53:38	30.77	31230.0	36808.1	87481.8	94924.9	1246.8	1756.5
10:54:38	30.62	32023.7	37746.2	88275.5	95863.0	1278.6	1788.2
10:55:38	30.61	32820.4	38684.4	89072.2	96801.1	1310.5	1820.1

Time of Day	Skid 2 Viscosity	Stage Clean Vol	Stage Slurry Vol	Job Clean
	cp	gal	gal	gal
10:55:52	Stage Change 6 - CONTINUE 4 PPG 20/40 SLF STAGE WITH 0P II BREAKERS			
10:56:38	30.44	623.8	735.9	89868.8
10:57:38	30.17	1417.8	1673.5	90662.8
10:58:38	29.91	2213.1	2612.5	91458.1
10:59:38	29.10	3010.0	3551.8	92255.0
11:00:38	29.13	3801.6	4487.1	93046.5
11:01:38	29.52	4590.8	5420.6	93835.8
11:02:38	29.55	5397.6	6359.3	94642.5
11:03:38	29.62	6196.3	7302.9	95441.2
11:04:38	28.73	6986.2	8248.2	96231.2
11:05:38	28.69	7788.9	9192.5	97033.8
11:06:38	28.79	8586.3	10136.0	97831.2
11:07:38	28.91	9382.7	11079.3	98627.5
11:08:38	28.98	10173.6	12020.8	99418.5
11:09:38	28.98	10963.6	12961.2	100208.4
11:10:38	29.20	11750.4	13900.7	100995.3
11:11:38	29.42	12549.8	14840.9	101794.7
11:12:38	29.50	13340.5	15780.4	102585.4
11:13:38	29.62	14135.5	16720.6	103380.4
11:14:38	29.43	14931.3	17661.0	104176.2
11:15:38	29.37	15725.8	18602.9	104970.7
11:16:38	29.51	16519.6	19544.0	105764.5
11:17:38	29.59	17311.0	20486.6	106555.9
11:18:38	29.63	18104.6	21427.7	107349.5
11:19:38	29.73	18897.8	22370.0	108142.6
11:20:38	29.75	19690.6	23312.4	108935.4
11:21:38	29.36	20482.7	24255.2	109727.5
11:22:38	29.28	21275.7	25198.5	110520.5
11:23:38	29.43	22069.1	26141.4	111313.9
11:24:38	29.55	22862.9	27082.3	112107.6
11:25:38	29.66	23653.4	28022.7	112898.1
11:26:38	29.80	24443.4	28962.5	113688.1
11:27:38	29.83	25232.5	29901.7	114477.1
11:28:01	Stage Change 7 - START 5 PPG SAND STAGE WITH INCREASED BREAKER			
11:28:38	29.72	459.5	588.2	115218.2
11:29:38	30.06	1227.0	1530.1	115985.6
11:30:38	29.95	1993.2	2473.2	116751.8
11:30:42	5 PPG SLF ON PERFS.			
11:31:38	29.98	2749.9	3415.5	117508.5
11:32:38	29.99	3504.9	4356.9	118263.5
11:33:38	29.95	4268.4	5299.0	119027.0
11:34:38	29.93	5035.2	6241.2	119793.9
11:35:38	29.96	5797.5	7183.6	120556.1
11:36:38	30.06	6552.4	8124.6	121311.0
11:37:38	29.96	7306.3	9065.5	122064.9
11:38:38	29.93	8058.4	10006.5	122817.1
11:39:38	29.99	8812.5	10948.9	123571.1
11:40:38	29.83	9571.4	11892.3	124330.1
11:41:38	30.01	10334.2	12837.7	125092.8
11:42:38	29.76	11099.7	13784.2	125858.3
11:43:38	28.95	11865.7	14730.9	126624.3
11:44:38	28.34	12628.8	15678.9	127387.4
11:45:38	28.07	13385.6	16627.0	128144.2
11:46:38	27.86	14158.1	17575.4	128916.6
11:47:38	27.57	14927.4	18523.1	129686.0

Time of Day	Skid 2 Viscosity	Stage Clean Vol	Stage Slurry Vol	Job Clean Vol	Job Slurry Vol	Stage Proppant Pumped	Job Proppant Pumped
	cp	gal	gal	gal	gal	sack	sack
11:48:38	27.53	15699.8	19471.4	130458.4	146729.9	804.9	3671.1
11:49:01	Stage Change 8 - CONTINUE 5 PPG SAND STAGE WITH INCREASED BREAKER						
11:49:38	27.55	475.5	584.6	131229.8	147678.0	24.3	3710.3
11:50:38	27.34	1234.4	1531.2	131988.8	148624.6	63.5	3749.6
11:51:38	27.67	1997.6	2478.4	132752.0	149571.8	102.4	3788.5
11:52:38	27.73	2778.4	3423.5	133532.8	150516.8	141.3	3827.4
11:53:38	27.88	3548.7	4369.7	134303.2	151463.0	180.5	3866.6
11:54:38	27.98	4308.8	5315.9	135063.1	152409.1	219.7	3905.8
11:55:38	28.06	5074.8	6262.9	135829.2	153356.1	258.9	3945.0
11:56:38	28.09	5849.9	7208.0	136604.3	154301.2	297.6	3983.6
11:57:38	28.06	6672.8	8151.4	137427.2	155244.7	336.1	4022.1
11:57:48	Stage Change 9 - FLUSH						
11:58:38	27.60	804.6	790.9	138392.4	156184.0	4.6	4032.0
11:59:38	26.57	1735.7	1686.6	139323.5	157079.8	4.6	4032.0
12:00:38	25.73	1944.7	1853.4	139532.5	157246.5	5.4	4032.8
12:01:38	14.52	1944.7	1853.4	139532.5	157246.5	5.4	4032.8
12:01:52	ISDP @ 3082 PSI						
12:02:38	13.83	1944.7	1853.4	139532.5	157246.5	5.4	4032.8

Time of Day	Tubing Pressure	Annulus Pressure	Calc'd BH Pressure	Clean Rate	Slurry Rate	BH Proppant Conc	Job Slurry Vol
	psi	psi	psi	bbl/min	bbl/min	lb/gal	gal
08:26:38	12	0	0	0.0	1.2	0.00	0.0
08:26:38	Start Job						
08:27:38	12	0	3269	0.0	0.5	0.00	10.4
08:28:38	10	0	3268	0.0	0.0	0.00	15.5
08:29:38	11	0	3268	0.0	0.4	0.00	22.2
08:30:38	10	0	3267	0.0	0.0	0.00	30.0
08:31:22	Stage Change 1 - LOAD & BREAK						
08:31:38	10	1	3336	0.0	0.0	0.00	1.0
08:32:38	1884	10	4995	0.0	2.8	0.00	41.9
08:33:38	3651	10	6074	9.7	7.8	0.00	296.0
08:34:38	3916	946	6152	7.5	7.4	0.00	609.5
08:35:38	4576	950	5700	10.4	9.7	0.00	1004.4
08:36:38	4508	788	5033	9.9	9.8	0.00	1414.4
08:37:38	4536	941	4526	9.8	9.8	0.00	1825.9
08:38:38	2794	807	6055	0.0	0.0	0.00	1860.6
08:39:16	ISDP @ 2853 PSI						
08:39:38	2719	803	5981	0.0	0.0	0.00	1860.6
08:40:38	2651	827	5911	0.0	0.0	0.00	1860.6
08:41:38	2581	868	5842	0.0	0.0	0.00	1861.4
08:42:38	2509	496	5771	0.0	0.0	0.00	1861.4
08:43:38	2451	10	5712	0.0	0.0	0.00	1861.4
08:44:38	2390	9	5652	0.0	0.0	0.00	1861.4
08:45:15	Stage Change 2 - PAD						
08:45:33	WAIT ON RIG TO FIX LEAK						
08:45:38	2338	987	5599	0.0	0.0	0.00	1861.5
08:46:20	START SPEARHEADING 500 GALS. 15% ACID						
08:46:38	2540	1094	5800	0.0	0.0	0.00	1861.5
08:47:38	2644	1056	5904	0.0	0.0	0.00	1861.5
08:48:38	2699	997	5958	0.0	0.0	0.00	1861.5
08:49:38	2729	931	5931	0.0	0.0	0.00	1861.6
08:50:38	2752	865	5954	0.0	0.0	0.00	1861.6
08:51:38	2772	799	5973	0.0	0.0	0.00	1861.6
08:52:38	2523	777	5731	0.2	0.0	0.00	1955.6
08:53:37	START PRE PAD,NO CROSSLINKER TO START						
08:53:38	4948	788	5191	11.2	9.9	0.00	2152.8
08:54:38	6489	660	6450	12.7	12.3	0.00	2641.0
08:55:38	6132	444	7198	12.2	12.2	0.00	3151.9
08:56:38	6509	956	8376	12.9	14.5	0.00	3680.6
08:57:38	5961	917	7211	18.0	18.9	0.00	4337.1
08:58:38	6412	848	7005	24.2	22.8	0.00	5225.6
08:58:52	START CROSSLINKER @ .75- 5200 GALS. CLEAN						
08:59:38	6079	968	6878	22.4	21.7	0.00	6161.7
09:00:38	6036	918	6697	22.6	22.5	0.00	7090.4
09:01:38	5948	1051	6609	22.9	22.5	0.00	8035.1
09:02:38	5934	1021	6620	22.2	22.3	0.00	8978.0
09:03:31	START REVERSE STEP RATE						
09:03:38	4801	974	6145	22.6	17.9	0.00	9909.4
09:04:38	3086	916	5562	15.7	9.2	0.00	10638.7
09:05:38	3944	890	6402	8.6	8.9	0.00	11010.5
09:06:38	3021	875	6097	4.4	0.0	0.00	11203.3
09:07:27	ISDP @ 3005 PSI						
09:07:38	2955	918	6147	0.0	0.0	0.00	11203.7
09:08:38	2944	968	6136	0.0	0.0	0.00	11203.7
09:09:38	2911	1011	6103	0.0	0.0	0.00	11203.7
09:10:38	2883	1052	6075	0.0	0.0	0.00	11203.7

Time of Day	Tubing Pressure	Annulus Pressure	Calc'd BH Pressure	Clean Rate	Slurry Rate	BH Proppant Conc	Job Slurry Vol
	psi	psi	psi	bbl/min	bbl/min	lb/gal	gal
09:11:38	2858	1086	6050	0.0	0.0	0.00	11203.7
09:12:38	2835	1122	6027	0.0	0.0	0.00	11203.7
09:13:38	2815	1154	6007	0.0	0.0	0.00	11203.7
09:14:38	2798	1186	5991	0.0	0.0	0.00	11203.7
09:15:38	2784	1214	5977	0.0	0.0	0.00	11203.7
09:16:38	2774	1242	5967	0.0	0.0	0.00	11203.7
09:17:38	2767	1269	5959	0.0	0.0	0.00	11203.7
09:18:38	2765	1295	5958	0.0	0.0	0.00	11203.7
09:19:38	2764	1319	5958	0.0	0.0	0.00	11203.7
09:20:38	2767	1341	5959	0.0	0.0	0.00	11203.7
09:21:38	2756	1164	5948	0.0	0.0	0.00	11203.7
09:22:38	2756	1063	5948	0.0	0.0	0.00	11203.7
09:23:38	2963	1114	5898	0.0	2.6	0.00	11222.6
09:24:38	4373	1087	6492	16.0	12.2	0.00	11527.0
09:25:38	5772	1020	6910	22.7	19.4	0.00	12215.3
09:26:38	6158	883	6815	22.8	22.4	0.00	13137.4
09:27:38	6028	981	6669	22.7	22.5	0.00	14078.7
09:28:38	5973	905	6608	22.5	22.6	0.00	15021.7
09:29:38	5967	852	6654	22.3	22.5	0.00	15965.7
09:30:38	5944	808	6681	22.8	22.4	0.00	16909.4
09:31:38	5942	997	6671	23.0	22.4	0.00	17849.4
09:32:38	5940	966	6669	22.9	22.4	0.00	18791.7
09:33:38	5896	940	6606	22.9	22.5	0.00	19733.8
09:34:38	5899	919	6607	22.5	22.5	0.00	20678.6
09:35:38	5862	902	6599	22.8	22.3	0.00	21622.8
09:36:38	5854	886	6580	22.6	22.4	0.00	22562.7
09:37:38	5851	873	6563	22.7	22.4	0.00	23502.5
09:38:38	5846	862	6567	22.5	22.4	0.00	24442.3
09:39:38	5841	852	6560	22.5	22.4	0.00	25383.7
09:40:38	5834	1060	6546	22.7	22.5	0.00	26323.7
09:41:38	5828	1053	6549	22.6	22.4	0.00	27266.2
09:42:19	CUT GEL-LOADING TO 7.5 LB/1000						
09:42:38	5827	1046	6532	22.5	22.5	0.00	28209.2
09:43:38	5824	1036	6537	22.5	22.5	0.00	29152.9
09:44:38	5825	1029	6536	22.5	22.5	0.00	30095.6
09:45:38	5799	1020	6537	22.6	22.3	0.00	31036.4
09:46:38	5812	1017	6530	22.7	22.5	0.00	31981.2
09:47:38	5819	1011	6528	22.7	22.5	0.00	32927.0
09:48:38	5819	1004	6523	22.5	22.5	0.00	33872.2
09:49:38	5820	997	6520	22.5	22.5	0.00	34817.3
09:50:38	5789	993	6513	20.0	22.4	0.00	35761.6
09:50:40	Stage Change 3 - START 2 PPG 20/40 SAND STAGE						
09:51:38	5709	987	6516	21.3	22.4	0.00	36701.9
09:52:38	5702	982	6611	20.7	22.5	0.00	37643.9
09:53:38	5702	981	6693	20.7	22.4	1.97	38585.1
09:54:38	5708	978	6686	20.7	22.4	2.08	39528.2
09:55:38	5704	972	6677	20.5	22.5	2.05	40472.1
09:56:38	5704	972	6670	20.6	22.5	2.05	41415.8
09:57:38	5690	969	6655	20.7	22.5	2.06	42360.1
09:58:38	5683	964	6660	20.7	22.5	2.06	43305.2
09:59:38	5673	960	6670	20.6	22.4	2.02	44246.8
10:00:38	5689	959	6685	20.7	22.4	2.05	45187.8
10:01:05	Stage Change 4 - START 3 PPG 20/40 SAND STAGE						
10:01:38	5677	956	6656	19.4	22.5	2.03	46128.8
10:02:38	5696	953	6741	19.6	22.5	2.02	47073.0

Time of Day	Tubing Pressure	Annulus Pressure	Calc'd BH Pressure	Clean Rate	Slurry Rate	BH Proppant Conc	Job Slurry Vol
	psi	psi	psi	bbl/min	bbl/min	lb/gal	gal
10:03:38	5701	951	6772	19.9	22.5	2.84	48017.6
10:03:51	3 PPG SLF ON PERFS.						
10:04:38	5700	950	6775	19.8	22.5	3.11	48963.2
10:05:38	5693	1055	6750	19.8	22.6	3.01	49907.8
10:06:38	5685	1051	6806	19.8	22.3	3.07	50852.5
10:07:38	5680	1048	6814	19.7	22.2	3.11	51789.1
10:08:38	5683	1044	6802	19.5	22.3	3.01	52725.5
10:09:38	5680	1040	6805	19.6	22.3	3.02	53661.6
10:10:38	5688	1036	6802	19.7	22.4	3.13	54597.5
10:11:38	5691	1034	6810	19.7	22.3	3.07	55534.2
10:12:38	5694	1031	6814	19.6	22.3	3.01	56470.3
10:13:38	5696	1028	6816	19.7	22.3	3.00	57406.6
10:14:24	Stage Change 5 - START 4 PPG 20/40 SAND STAGE						
10:14:38	5701	1027	6831	18.4	22.3	3.02	58342.7
10:15:38	5667	1021	6832	19.0	22.4	3.02	59279.8
10:16:38	5659	1018	6840	19.0	22.5	3.85	60219.1
10:17:38	5660	1016	6862	19.0	22.4	4.04	61157.8
10:18:38	5653	1013	6860	18.9	22.4	3.93	62096.4
10:19:38	5652	1014	6869	19.0	22.3	3.99	63034.5
10:20:38	5656	1011	6862	19.0	22.4	4.11	63973.9
10:21:38	5660	1009	6866	19.0	22.4	3.99	64914.1
10:22:38	5657	1007	6866	19.0	22.3	4.05	65853.3
10:23:38	5651	1004	6858	19.0	22.4	4.03	66792.0
10:24:38	5655	1002	6860	19.0	22.4	4.03	67730.8
10:25:38	5652	1001	6870	18.9	22.3	4.04	68668.1
10:26:38	5653	999	6868	18.9	22.3	4.06	69605.5
10:27:38	5646	996	6855	18.9	22.3	4.05	70542.6
10:28:38	5647	992	6865	18.8	22.3	3.98	71479.2
10:29:38	5647	988	6878	18.9	22.3	4.02	72415.9
10:30:38	5664	985	6875	19.0	22.3	3.99	73352.8
10:31:38	5680	981	6883	19.0	22.4	4.03	74291.0
10:32:38	5687	978	6905	19.0	22.3	3.99	75229.3
10:33:38	5674	980	6878	18.9	22.4	4.02	76166.2
10:34:38	5675	977	6894	19.0	22.3	4.10	77103.5
10:35:38	5703	975	6911	18.9	22.3	4.04	78040.8
10:36:38	5695	972	6905	19.0	22.3	4.04	78977.9
10:37:38	5693	969	6894	19.0	22.4	4.01	79916.5
10:38:38	5692	966	6903	19.0	22.3	4.05	80855.1
10:39:38	5702	965	6911	19.0	22.4	3.97	81793.3
10:40:38	5702	962	6903	19.0	22.3	3.97	82731.6
10:41:38	5700	961	6914	18.8	22.3	4.02	83670.5
10:42:38	5700	958	6904	19.0	22.4	4.02	84607.7
10:43:38	5698	953	6911	19.0	22.3	3.95	85544.5
10:44:38	5692	948	6902	19.0	22.3	4.05	86481.2
10:45:38	5689	945	6908	18.9	22.3	3.99	87418.4
10:46:38	5696	942	6891	18.9	22.4	4.02	88354.8
10:47:38	5705	942	6910	18.8	22.4	3.99	89293.7
10:48:38	5704	1098	6924	18.9	22.3	4.02	90231.7
10:49:38	5715	1098	6924	19.0	22.3	4.06	91170.6
10:50:38	5724	1096	6933	19.0	22.3	4.04	92109.6
10:51:38	5724	1094	6926	19.0	22.4	3.95	93048.5
10:52:38	5727	1095	6934	19.0	22.3	4.02	93987.0
10:53:38	5726	1092	6928	18.9	22.4	3.97	94924.9
10:54:38	5732	1092	6936	19.0	22.4	4.01	95863.0
10:55:38	5733	1090	6940	19.0	22.4	3.99	96801.1

Time of Day	Tubing Pressure psi	Annulus Pressure psi	Calc'd BHC Pressure psi	Clean Rate bbl/min	Slurr bbl
10:55:52	Stage Change 6 - CONTINUE 4 PPG 20/40 SLF STAGE WITH 0P II BREAKERS				
10:56:38	5733	1087	6921	19.0	2
10:57:38	5724	1084	6938	18.9	2
10:58:38	5720	1080	6902	19.0	2
10:59:38	5715	1078	6926	18.9	2
11:00:38	5696	1073	6942	18.7	2
11:01:38	5610	1069	6839	18.8	2
11:02:38	5704	1065	6926	19.2	2
11:03:38	5761	1065	6941	18.9	2
11:04:38	5768	1062	6949	19.0	2
11:05:38	5775	1059	6966	19.0	2
11:06:38	5776	1054	6964	19.0	2
11:07:38	5781	1050	6966	18.9	2
11:08:38	5779	1044	6960	18.8	2
11:09:38	5774	1038	6969	18.6	2
11:10:38	5768	1032	6967	19.0	2
11:11:38	5768	1027	6966	18.9	2
11:12:38	5768	1021	6964	18.8	2
11:13:38	5777	1019	6972	18.8	2
11:14:38	5796	1013	6990	18.9	2
11:15:38	5801	1006	6990	18.8	2
11:16:38	5811	996	6990	19.0	2
11:17:38	5814	988	7012	18.8	2
11:18:38	5813	979	7006	18.8	2
11:19:38	5818	971	7019	18.8	2
11:20:38	5818	966	6999	18.8	2
11:21:38	5820	960	7003	18.9	2
11:22:38	5818	957	7010	18.8	2
11:23:38	5820	950	7005	18.9	2
11:24:38	5818	1066	7016	18.8	2
11:25:38	5823	1060	7015	18.8	2
11:26:38	5818	1054	7020	18.8	2
11:27:38	5818	1049	7022	18.4	2
11:28:01	Stage Change 7 - START 5 PPG SAND STAGE WITH INCREASED BREAKER				
11:28:38	5802	1046	7014	17.8	2
11:29:38	5771	1042	7041	18.3	2
11:30:38	5776	1040	7033	18.1	2
11:30:42	5 PPG SLF ON PERFS.				
11:31:38	5777	1039	7044	18.0	2
11:32:38	5779	1036	7058	18.0	2
11:33:38	5780	1036	7054	18.3	2
11:34:38	5780	1032	7054	18.2	2
11:35:38	5775	1031	7061	18.1	2
11:36:38	5771	1028	7057	18.0	2
11:37:38	5767	1025	7046	17.9	2
11:38:38	5770	1022	7054	17.9	2
11:39:38	5779	1019	7047	18.0	2
11:40:38	5782	1017	7046	18.1	2
11:41:38	5788	1017	7039	18.3	2
11:42:38	5796	1021	7048	18.2	2
11:43:38	5800	1022	7056	18.2	2
11:44:38	5799	1025	7038	18.0	2
11:45:38	5804	1023	7048	17.8	2
11:46:38	5806	1021	7048	18.4	2
11:47:38	5809	1020	7048	18.2	2

Time of Day	Tubing Pressure	Annulus Pressure	Calc'd BH Pressure	Clean Rate	Slurry Rate	BH Proppant Conc	Job Slurry Vol
	psi	psi	psi	bbl/min	bbl/min	lb/gal	gal
11:48:38	5812	1017	7056	18.6	22.6	5.12	146729.9
11:49:01	Stage Change 8 - CONTINUE 5 PPG SAND STAGE WITH INCREASED BREAKER						
11:49:38	5812	1014	7053	18.2	22.6	5.08	147678.0
11:50:38	5803	1012	7055	18.1	22.5	5.02	148624.6
11:51:38	5800	1012	7043	18.6	22.6	5.17	149571.8
11:52:38	5801	1012	7057	18.4	22.5	5.05	150516.8
11:53:38	5796	1014	7043	18.4	22.6	5.09	151463.0
11:54:38	5791	1016	7036	18.0	22.6	5.03	152409.1
11:55:38	5795	1020	7046	18.6	22.5	5.08	153356.1
11:56:38	5778	1019	7036	18.3	22.5	5.12	154301.2
11:57:38	5748	1016	7029	23.8	22.4	5.11	155244.7
11:57:48	Stage Change 9 - FLUSH						
11:58:38	5873	1015	7031	22.3	22.3	5.05	156184.0
11:59:38	5255	987	6911	16.5	17.5	4.45	157079.8
12:00:38	3039	893	6450	0.0	0.0	3.98	157246.5
12:01:38	3026	913	6436	0.0	0.0	3.98	157246.5
12:01:52	ISDP @ 3082 PSI						
12:02:38	2991	926	6402	0.0	0.0	3.98	157246.5
12:03:38	2959	940	6370	0.0	0.0	3.98	157246.5
12:04:38	2948	956	6358	0.0	0.0	3.98	157246.5
12:05:38	2940	972	6351	0.0	0.0	3.98	157246.5
12:06:38	2918	987	6330	0.0	0.0	3.98	157246.5

STAGE 1	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	4000.0	2046.9	Treating Pressure Avg/Max (psi)	3528 / 4620	5187 / 6510
Slurry Volume (gal)	4000.0	1861.5	BHTP Avg/Max (psi)	5427 / 6493	6314 / 8384
Start Fluid Rate (bbl/min)	5.0	0.0	Total Avg. Rate (bbl/min)	7.0	10.1
End Fluid Rate (bbl/min)	5.0	0.0	Avg. HHP (hp)	700.9	
Friction Model	1% KCl				
Description : LOAD & BREAK					

STAGE 2	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	34000.0	34190.1	Treating Pressure Avg/Max (psi)	5625 / 6510	5684 / 6490
Slurry Volume (gal)	34000.0	33915.8	BHTP Avg/Max (psi)	6594 / 8384	6623 / 8360
Start Fluid Rate (bbl/min)	22.0	0.0	Total Avg. Rate (bbl/min)	19.4	20.6
End Fluid Rate (bbl/min)	22.0	22.4	Avg. HHP (hp)	2766.4	
Friction Model	Gel				
Description : PAD					

STAGE 3	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	9000.0	8999.1	Treating Pressure Avg/Max (psi)	5699 / 5786	5693 / 5716
Slurry Volume (gal)	9820.8	9810.4	BHTP Avg/Max (psi)	6645 / 6706	6679 / 6776
Start Fluid Rate (bbl/min)	22.0	22.4	Total Avg. Rate (bbl/min)	22.4	22.5
End Fluid Rate (bbl/min)	22.0	22.4	Avg. HHP (hp)	3134.9	
Sand	20/40	0.04560 (gal/lb)	Prop in Wellbore (lb)	3539.7	
Start Conc (lb/gal)	2.00	0.16	Avg. Prop Concentration (lb/gal)	1.98	1.98
End Conc (lb/gal)	2.00	2.08	Prop in Formation (lb)	14218.3	
Friction Model	Gel				
Description : START 2 PPG 20/40 SAND STAGE					

STAGE 4	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	11000.0	10995.7	Treating Pressure Avg/Max (psi)	5691 / 5709	5689 / 5709
Slurry Volume (gal)	12504.8	12505.9	BHTP Avg/Max (psi)	6785 / 6834	6805 / 6875
Start Fluid Rate (bbl/min)	22.0	22.4	Total Avg. Rate (bbl/min)	22.4	22.4
End Fluid Rate (bbl/min)	22.0	22.3	Avg. HHP (hp)	3120.6	
Sand	20/40	0.04560 (gal/lb)	Prop in Wellbore (lb)	5044.8	
Start Conc (lb/gal)	3.00	2.08	Avg. Prop Concentration (lb/gal)	3.02	3.02
End Conc (lb/gal)	3.00	3.36	Prop in Formation (lb)	45895.7	
Friction Model	Gel				
Description : START 3 PPG 20/40 SAND STAGE					

STAGE 5	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	33000.0	32993.2	Treating Pressure Avg/Max (psi)	5684 / 5735	5687 / 5736
Slurry Volume (gal)	39019.2	38887.7	BHTP Avg/Max (psi)	6891 / 6958	6896 / 6958
Start Fluid Rate (bbl/min)	22.0	22.3	Total Avg. Rate (bbl/min)	22.3	22.3
End Fluid Rate (bbl/min)	22.0	22.3	Avg. HHP (hp)	3111.3	
Sand	20/40	0.04560 (gal/lb)	Prop in Wellbore (lb)	6367.6	
Start Conc (lb/gal)	4.00	3.42	Avg. Prop Concentration (lb/gal)	4.01	4.01
End Conc (lb/gal)	4.00	4.03	Prop in Formation (lb)	176332.0	
Friction Model	Gel				
Description : START 4 PPG 20/40 SAND STAGE					

STAGE 6	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	25500.0	25507.8	Treating Pressure Avg/Max (psi)	5775 / 5824	5779 / 5824
Slurry Volume (gal)	30151.2	30246.2	BHTP Avg/Max (psi)	6971 / 7038	6976 / 7041
Start Fluid Rate (bbl/min)	22.0	22.3	Total Avg. Rate (bbl/min)	22.4	22.4
End Fluid Rate (bbl/min)	22.0	22.4	Avg. HHP (hp)	3170.6	
Sand	20/40	0.04560 (gal/lb)	Prop in Wellbore (lb)	6605.6	
Start Conc (lb/gal)	4.00	4.05	Avg. Prop Concentration (lb/gal)	4.07	4.07
End Conc (lb/gal)	4.00	4.70	Prop in Formation (lb)	279986.3	
Friction Model	Gel				
Description : CONTINUE 4 PPG 20/40 SLF STAGE WITH OP II BREAKERS					

STAGE 7	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	16000.0	15982.9	Treating Pressure Avg/Max (psi)	5787 / 5820	5789 / 5815
Slurry Volume (gal)	19648.0	19819.0	BHTP Avg/Max (psi)	7046 / 7076	7049 / 7076
Start Fluid Rate (bbl/min)	22.0	22.4	Total Avg. Rate (bbl/min)	22.5	22.5
End Fluid Rate (bbl/min)	22.0	22.6	Avg. HHP (hp)	3188.3	
Sand	20/40	0.04560 (gal/lb)	Prop in Wellbore (lb)	7747.6	
Start Conc (lb/gal)	5.00	4.75	Avg. Prop Concentration (lb/gal)	5.09	5.09
End Conc (lb/gal)	5.00	5.01	Prop in Formation (lb)	360796.6	
Friction Model	Gel				
Description : START 5 PPG SAND STAGE WITH INCREASED BREAKER					

STAGE 8	Planned	Actual	SUMMARY	@Surface	@Perfs
Clean Volume (gal)	7000.0	6825.0	Treating Pressure Avg/Max (psi)	5794 / 5815	5715 / 6071
Slurry Volume (gal)	8596.0	8292.2	BHTP Avg/Max (psi)	7047 / 7074	7014 / 7065
Start Fluid Rate (bbl/min)	22.0	22.6	Total Avg. Rate (bbl/min)	22.5	21.8
End Fluid Rate (bbl/min)	22.0	22.3	Avg. HHP (hp)	3198.0	
None	None	0.00000 (gal/lb)	Prop in Wellbore (lb)	7622.2	
Start Conc (lb/gal)	5.00	5.01	Avg. Prop Concentration (lb/gal)	5.06	5.04
End Conc (lb/gal)	5.00	3.96	Prop in Formation (lb)	395083.5	
Friction Model	Gel				
Description : CONTINUE 5 PPG SAND STAGE WITH INCREASED BREAKER					

STAGE 9	Planned	Actual	SUMMARY	@Surface	@Perfs
STAGE	SKIPPED!				
Description : FLUSH					

Initial Conditions

<i>Treatment Parameters</i>	Job Type	OPTIFRAC-LITE
	Well Treated Down	Tubing
	Static Column Used	NO
	Earth Temperature	50.0 f
	Slurry Temperature	60.0 f
	BHTT	60.0 f
	Reservoir Pressure	0 psi
<i>Initial Wellbore Data</i>	Expected BHTP	3500 psi
	Wellbore fluid	Gel
	Density	8.40 lb/gal
	n-prime	0.4585
<i>Perf Data</i>	K-prime	0.021500 lb*sec^n/ft^2
	Number of	0
	Diameter	0.000 in
<i>Inventories</i>	Disch. Coeff	0.000
	Fluid Volume	141300.0 gal
	Proppant	402480.0 lb

Wellbore Data

Wellbore Segment Number	Actual Length (ft)	TVD (ft)	Casing ID (in)	Casing OD (in)	Tubing ID (in)	Tubing OD (in)
1	7375	7375	4.000	4.500	2.441	2.875
2	7486	7486	4.000	4.500	0.000	0.000

Time	Description
07:46:14	Prime Pumps Thursday September 30, 1999
07:57:38	TEST LINES TO 8500 PSI
08:05:43	SET POP OFF @ 7300 PSI
08:16:37	Safety Meeting
08:26:02	WAITING ON RIG CREW TO SET BACKSIDE POP OFF @ 1700 PSI
08:26:38	Start Job
08:31:22	Stage Change Stage 1 - LOAD & BREAK
08:39:16	ISDP @ 2853 PSI
08:45:15	Stage Change Stage 2 - PAD
08:45:33	WAIT ON RIG TO FIX LEAK
08:46:20	START SPEARHEADING 500 GALS. 15% ACID
08:53:37	START PRE PAD,NO CROSSLINKER TO START
08:58:52	START CROSSLINKER @ .75- 5200 GALS. CLEAN
09:03:31	START REVERSE STEP RATE
09:07:27	ISDP @ 3005 PSI
09:42:19	CUT GEL-LOADING TO 7.5 LB/1000
09:50:40	Stage Change Stage 3 - START 2 PPG 20/40 SAND STAGE
10:01:05	Stage Change Stage 4 - START 3 PPG 20/40 SAND STAGE
10:03:51	3 PPG SLF ON PERFS.
10:14:24	Stage Change Stage 5 - START 4 PPG 20/40 SAND STAGE
10:55:52	Stage Change Stage 6 - CONTINUE 4 PPG 20/40 SLF STAGE WITH 0P II BREAKERS
11:28:01	Stage Change Stage 7 - START 5 PPG SAND STAGE WITH INCREASED BREAKER
11:30:42	5 PPG SLF ON PERFS.
11:49:01	Stage Change Stage 8 - CONTINUE 5 PPG SAND STAGE WITH INCREASED BREAKER
11:57:48	Stage Change Stage 9 - FLUSH
12:01:52	ISDP @ 3082 PSI

PRESSURE

Stage	Tubing Pressure	Annulus Pressure	Calc'd BH Pressure
	psi (avg/max)	psi (avg/max)	psi (avg/max)
1	3528 / 4620	556 / 1016	5427 / 6493
2	5625 / 6510	931 / 1135	6594 / 8384
3	5699 / 5786	973 / 993	6645 / 6706
4	5691 / 5709	1014 / 1056	6785 / 6834
5	5684 / 5735	1004 / 1100	6891 / 6958
6	5775 / 5824	1032 / 1090	6971 / 7038
7	5787 / 5820	1028 / 1048	7046 / 7076
8	5794 / 5815	1015 / 1020	7047 / 7074
9	5487 / 6071	1002 / 1020	6923 / 7060
Totals:	(5452/6510)	(951/1135)	(6703/8384)

RATE

Stage	Slurry Rate	Clean Rate
	bbl/min (avg/max)	bbl/min (avg/max)
1	6.9 / 9.8	8.9 / 11.9
2	19.4 / 23.3	20.0 / 24.3
3	22.4 / 22.7	20.6 / 21.4
4	22.4 / 22.7	19.7 / 20.0
5	22.3 / 22.6	18.9 / 19.4
6	22.4 / 22.6	18.9 / 19.4
7	22.5 / 22.7	18.1 / 18.6
8	22.5 / 22.6	18.5 / 24.2
9	19.7 / 22.5	20.7 / 24.2
Totals:	(20.1/23.3)	(18.3/24.3)

SAND CONCENTRATION

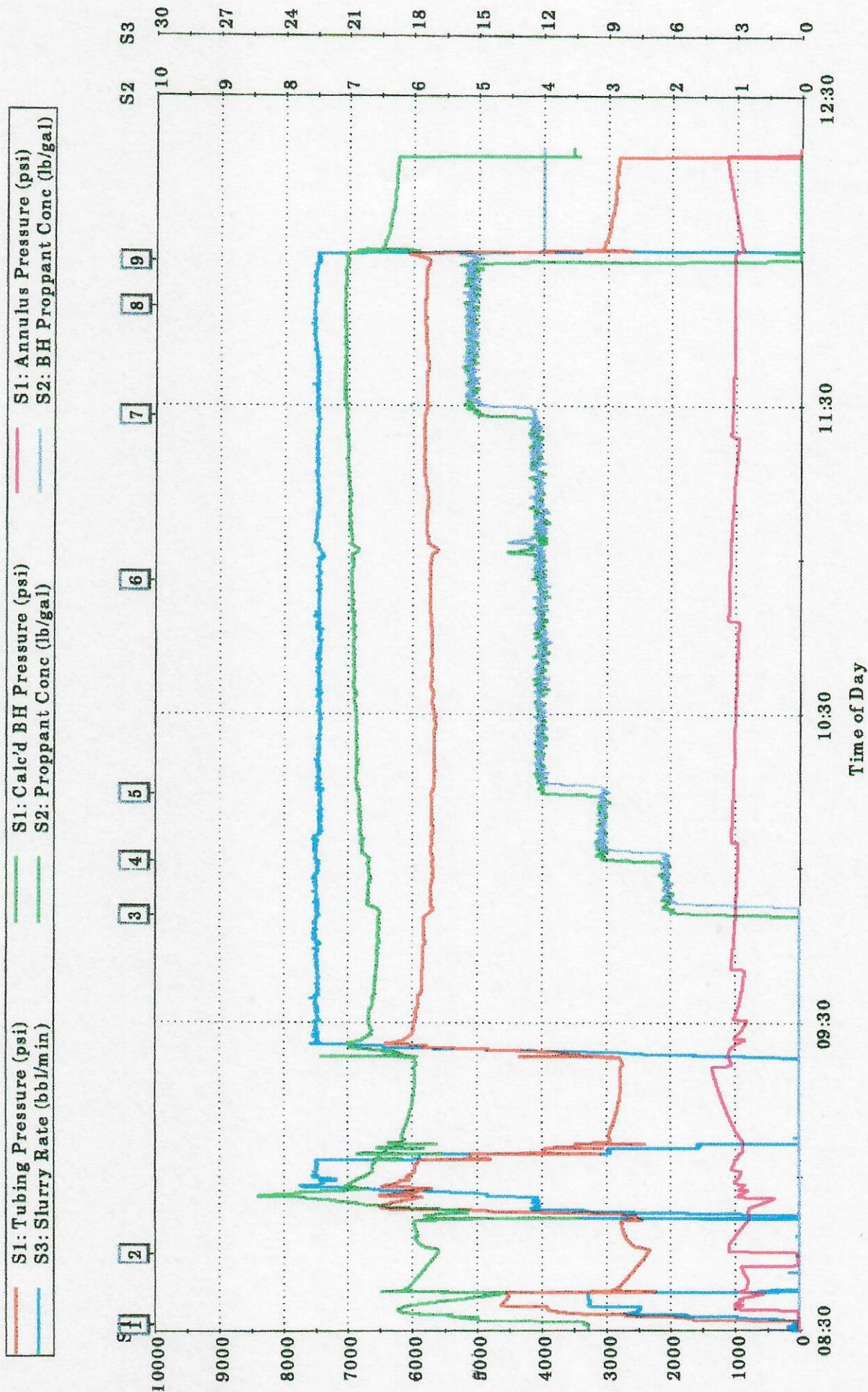
Stage	Proppant Conc	BH Proppant Conc
	lb/gal (avg/max)	lb/gal (avg/max)
1	0.00 / 0.00	0.00 / 0.00
2	0.00 / 0.00	0.00 / 0.00
3	1.98 / 2.17	1.59 / 2.17
4	3.02 / 3.36	2.87 / 3.16
5	4.01 / 4.13	3.96 / 4.13
6	4.07 / 4.70	4.06 / 4.55
7	5.09 / 5.23	5.01 / 5.22
8	5.06 / 5.30	5.09 / 5.23
9	0.26 / 2.56	4.95 / 5.29
Totals:	(2.61/5.30)	(3.06/5.29)

VOLUMES

Stage	Job Clean Vol gal	Stage Clean Vol gal	Job Slurry Vol gal	Stage Slurry Vol gal	Stage Proppant Pumped sack	Job Proppant Pumped sack
1	2046.9	2046.9	1861.5	1861.5	0.0	0.0
2	36237.0	34190.1	35777.2	33915.8	0.0	0.0
3	45243.0	8999.1	45595.4	9810.4	177.6	177.6
4	56245.7	10995.7	58109.0	12505.9	331.7	509.4
5	89245.0	32993.2	97004.5	38887.7	1317.4	1827.0
6	114752.5	25507.8	127250.4	30246.2	1038.9	2865.9
7	130741.5	15982.9	147077.6	19819.0	819.2	3685.4
8	137579.4	6825.0	155385.5	8292.2	341.0	4027.1
9	139532.5	1944.7	157246.5	1853.4	5.4	4032.8
Totals:	(139532.5)	(139485.3)	(157246.5)	(157192.1)	(4031.2)	(4032.8)

Stage
1
2
3
4
5
6
7
8
9
Totals:

TREATMENT PLOT



CUSTOMER: HS RESOURCES
WELL DESC: WARDELL UPRR 41-19 #6
TICKET: 460170
DATE: Thu 30-Sep-99
FORMATION: CODELL REFRACTURE



HALLIBURTON

TOP OPERATING

7500 W. Mississippi, Suite B-3
Lakewood, CO 80260-4541

Well Type: 2
Well Cat: 1
State: CO
County: Boulder
Serv. Loc. 55410
Ref Loc. 1

Tanaka 1-2
9/30/99

Operator: James E. Brady
Engineer: Lance J. Perez

Continuation to Unified Ticket

TICKET # 176530

PRICE	Secondary	Discount	Part #	Loc. Cacti	Description	First Qty.	Unit of Measure	Second Qty.	Unit of Measure	Unit Price	Book Price	Discount Amount	Net Price	Note
Stimulation Equipment Charges														
3124	.550				Mileage for Stimulation Equip-One Way	20 MI			14 Units	3.65	1,022.00	(562.10)	459.90	
3125	.550				Mileage for Stimulation Equip-One Way	20 MI			2 Units	2.15	86.00	(47.29)	38.71	
3142	.550				Minimum Pump Charge HT-400	3 HR			4 Pump	2,940.00	11,760.00	(6,468.00)	5,292.00	
3256	.550				Techcommand w/o Arc System	3 HR			1 Job	3,675.00	3,675.00	(2,021.25)	1,653.75	
3153	.550				Slurry Processor System	25 BPM			1 EA	3,931.20	3,931.20	(2,162.16)	1,769.04	
3243	.550				Flowmeter-Per Treatment	1 Job			1 Unit	290.85	290.85	(159.97)	130.88	
3620	.550				Ground Manif or Frac Manif Trl	1 Job			1 Unit	1,020.75	1,020.75	(561.41)	459.34	
3238	.550				Casing Control Valve	1 Job			1 Unit	905.05	905.05	(497.78)	407.27	
3324	.550				Mobile Lab Van W/Tech	1 Day			1 Unit	2,546.25	2,546.25	(1,400.44)	1,145.81	
2521	.550				Pumping Service First 4 Hrs.	3000 Psi			1 Unit	1,076.25	1,076.25	(591.94)	484.31	
3261	.550				Radioactive Densometer	1 Job			1 Unit	615.30	615.30	(338.42)	276.88	
										26,928.65	(14,810.76)		12,117.89	
Chemical Additives														
14304	.550				PrimaGel	35 LB			34000 Gal	13.75	16,362.50	(8,999.38)	7,363.12	
14304	.550				PrimaGel	33 LB			53000 Gal	13.75	24,048.75	(13,226.81)	10,821.94	
14304	.550				PrimaGel	31 LB			49000 Gal	13.75	20,886.25	(11,487.44)	9,398.81	
10003757	.550				LGC-8	1070 GAL				0.00	0.00	N/C	N/C	
10003833	.550				CL-23	67 GAL				0.00	0.00	N/C	N/C	
100012244	.550				CL-29	29 GAL				0.00	0.00	N/C	N/C	
100003844	.550				SSO-21M	67 GAL				35.50	2,378.50	(1,308.18)	1,070.32	
100003651	.550				Losurf - 300	74 GAL				37.50	2,775.00	(1,526.25)	1,248.75	
100003729	.550				Clayfix II	280 GAL				34.20	9,576.00	(5,266.80)	4,309.20	
100012769	.550				Gel-Sta	400 LB				2.30	920.00	(506.00)	414.00	
100003801	.550				Optiflo III	34 LB				31.00	1,054.00	(579.70)	474.30	
100001577	.550				GBW-3	34 LB				12.15	413.10	(227.21)	185.89	
100003789	.550				Optiflo II	12 LB				21.95	263.40	(144.87)	118.53	
100003624	.550				SP Breaker	26 LB				6.55	170.30	(93.67)	76.63	
100012230	.550				BE-5	42 LB				48.45	2,034.90	(1,119.20)	915.70	
	.550				HAI-85M	2 GAL				67.50	135.00	(74.25)	60.75	
	.550				15% HCl Acid	500 GAL				2.07	1,035.00	(569.25)	465.75	
										82,052.70	(45,129.01)		36,923.69	
Proppant and Bulk Handling Charges														
3220	.550				Mountain Mover Sand System	1 Day			2 Unt	1,236.25	2,472.50	(1,359.88)	1,112.62	
100003678	.550				Sand 20/40 White Bulk	402480 LB				8.13	32,721.62	(17,996.89)	14,724.73	
16122	.550				Mileage For Bulk Frac. Material	4024.8 TMI				1.25	5,031.00	(2,767.05)	2,263.95	
3346	.550				Proppant Pump Charge	2 PPG			79000 GAL	0.05	3,950.00	(2,172.50)	1,777.50	
3346	.550				Proppant Pump Charge	5 PPG			23000 GAL	0.13	2,990.00	(1,644.50)	1,345.50	
										47,165.12	(25,940.82)		21,224.30	

Customer Signature: _____

156,146.47 (85,880.59) 70,265.88

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