Shell E&P Technology Company

A Division of Shell Exploration & Production Company

Bellaire Technology Center
P.O. Box 481
Houston, TX 77001-0481

3737 Bellaire Boulevard
Houston, TX 77025

March 28, 1996

Marmorshteyn Oil
P.O. Box 73084
Davis, CA 95617

RE: Abrasive Hydrojet Technology Field Trial in Albert Load, Michigan

Dear Mr. Lyustiger:

The demonstration of abrasive hydrojet technology by Marmorshteyn Oil during our field trial in Michigan was very impressive. We are very pleased with the performance of your downhole hydrojet slotting equipment, the field procedures and the services provided by your personnel. The analysis of the field trial data indicates that this technology, although widely used in Russia but rather new and undeveloped in the United States, now holds great potentials for its expanded use throughout the industry here.

Despite the fact that our engineering group in Shell received the technology with high expectations, we were not entirely certain about the tool performance prior to the field trial conducted during the week of February 5, 1996 at a field in Montmorency County, Michigan. Nevertheless, our expectations were not disappointed. The hydrojet tool, provided by Marmorshteyn Oil and not previously used in this country, was readily adapted to the Halliburton hydraulic fracturing surface equipment on site. The slot geometry, as seen by video log run in one of the well, was according to the design. The penetration depth cannot be easily assessed from the video, but the amount and the size of formation cuttings, observed on site, suggested significant slotting depth.

The consulting and tool operation provided by Marmorshteyn Oil during the test is mostly appreciated. The personnel brought on site were very efficient, knowledgeable about their technology, and cooperative in providing full expectations of the procedures being used. This openness resulted in identifying several very promising applications of the abrasive hydrojet technology in this country. Attached please find our internal memo summarizing the field trial and our on-site discussions. Shell E&P Technology is currently evaluating various options of pursuing the application and further development of this technology. Therefore, please consider at this time the summary of our discussions confidential.

Looking forward to future productive collaboration in applications and further development of this new promising technology.

Very truly yours

Shell E&P Technology Company
InterOffice Memorandum

APRIL 15, 1996

FROM: J. SHLYAPOBERSKY, STAFF RESEARCH ENGINEER, BTC
A. LOCKWOOD, SR. PRODUCTION ENGINEER, EA-SWEPI

TO: R. B. STANBERY, WELL ENGINEERING SKILL MANAGER, BTC
J . L. MORRIS, TECHNICAL MANAGER – MICHIGAN, SWEPI

SUBJECT: ABRASIVE HYDROJET TECHNOLOGY FIELD TRIAL IN ALBERT LOAD, MICHIGAN

A field trial of abrasive hydrojet (AHJ) slotting perforation technology was recently performed in the Albert/Loud field in Michigan. The purpose of the trial was to test the Russian hydrojet tool, and gauge its effectiveness in increasing completion efficiency in the naturally fractured Antrim Shale. Following the hydrojet slotting, the wells were fractured with Antrim brine then swab-tested. In addition, a video camera was run in one of the wells to view the slots and to get a qualitative feel for the effectiveness of the hydrojetting tool. The next step in the process will be to fracture stimulate the wells with a "clean" fracturing medium consisting of antrim brine and a neutral buoyancy proppant, with no additives. The following is a short summary of the hydrojet slotting stage of this test.

The downhole hydrojetting tool, provided by Marmorsteyn Oil Company of California and operated by Russian consultants, performed according to the design specifications. Several independent evidences of creating slots in casing and formation were observed: small metal dust from dried return solids on magnet; cement and formation cuttings of various shapes and sizes (up to l-inch shale pebbles); video camera log of hydrojet slots .

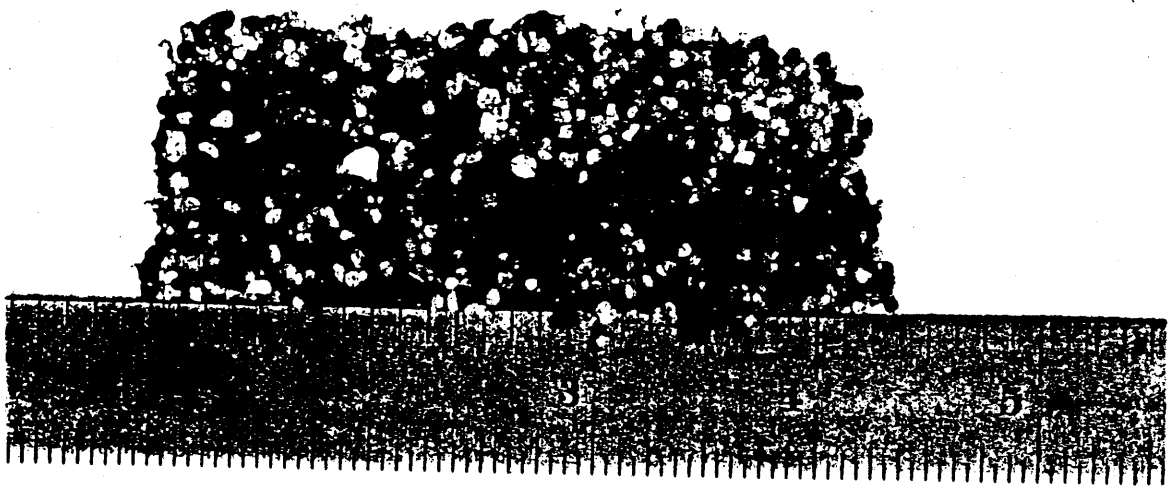
The logistics of performing abrasive hydrojetting operations with standard fracturing equipment, provided by Halliburton, worked very well, although at the beginning of the tests we experienced some difficulties in identifying the optimal conditions for abrasive hydrojetcutting. Variables such as sand concentration, nozzle-size, and pump rates and pressures were adjusted until optimal conditions were achieved (i.e., adequate formation cutting was maintained while reducing the sand concentration and pump pressures to prolong nozzle life). In addition, several opportunities to reduce future AHJ job costs and increase job efficiency were identified.

HydroJet Technology Field Trial

Albert Load, Michigan, February 7, 1996

Well C1-20, Depth 1283 -1284

Cuttings and Abrasive Material

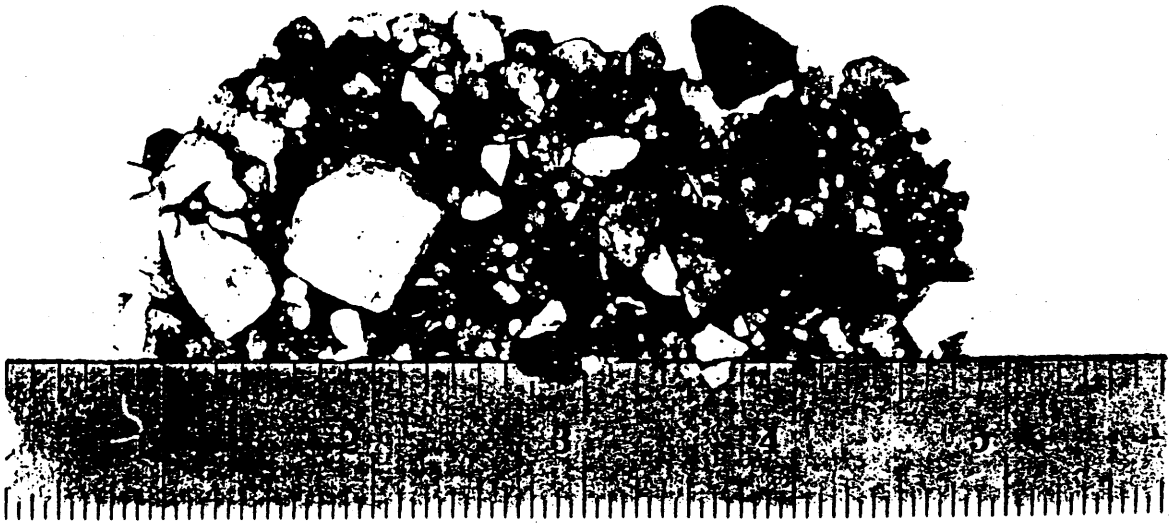


HydroJet Technology Field Trial

Albert Load, Michigan, February 7, 1996

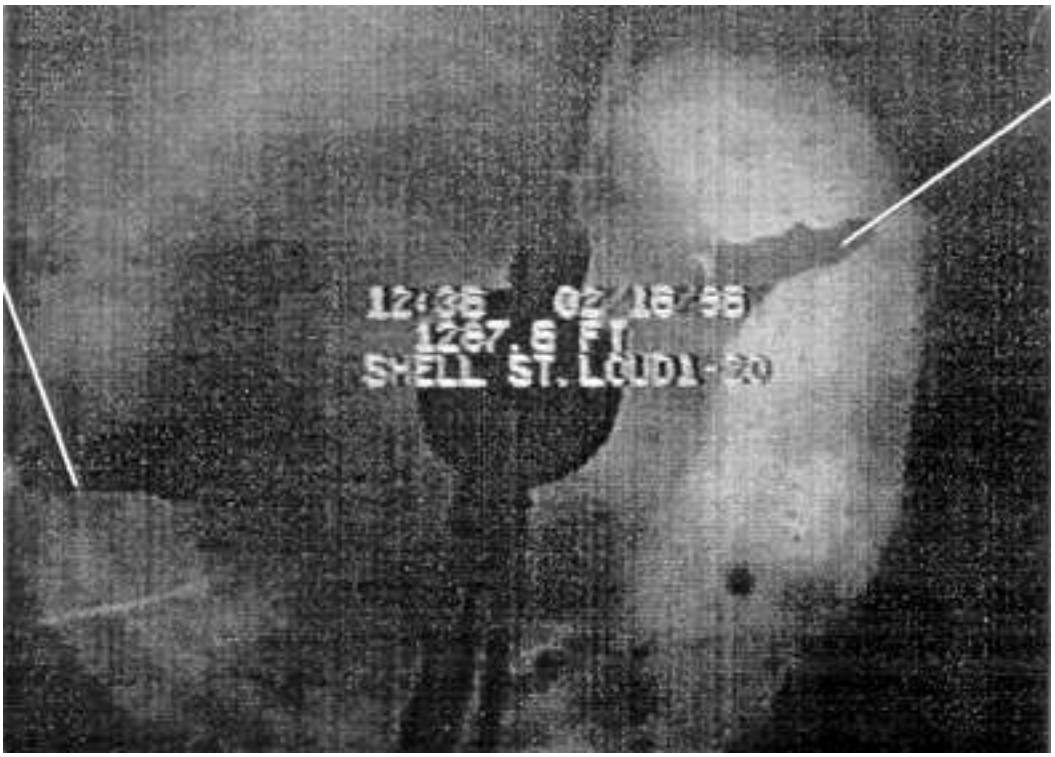
Well C1-20, Depth 1281-1282

Cuttings and Abrasive Material



HydroJet Technology Field Trial

Albert Load, Michigan, February 18, 1996
Well C1-20, Depth 1287-1288
Video Log of Slot Inside Wellbore after AHJ



Appendix B: Benefits, Improvements And The Most Promising Applications Of Abrasive Hydrojet Perforation Technology.

The most obvious benefits that abrasive hydrojet technology can provide are the following:

- The AHJ slotting provides a very precise, reliable and controllable method to establish large inflow path between the cased borehole and the formation. The inflow area of an 8-in per foot dual slot is equivalent to 36 spf of 0.75-in shaped charge holes. Moreover, the pressure drop on HJ slot is significantly less then on the areal equivalent set of perforated holes. I n addition, the HJ cutting process is much more robust in creating low-resistant flow path, even with two strings of casing (the latterr may require the adjustment of the cutting speed).

- HJ slotting preserves the integrity of the cement bond. This can be critical for zonal isolation when the perforated intervals are in close proximity to water or a gas cap. The integrity of the cement sheath also increases the casing strength and resistance to failure.

- The created HJ slots geometry sirnplifies the fracture initiation and therefore may significantly reduce the near wellbore problems (multiple fracturing, tortuosity, etc). This reduces the chances of NWB screenouts during fracture stimulation and minimizes the choking non-darcy effect because of the tortuous path during production (esp., in gas wells).

- HJ slot geometry (with the penetration depth up to 3-5 ft) bypasses the near wellbore mud invasion zone and increases the drainage aera. This suggests that HJ slotting in clean, high permeability sands is the preferred completion method. If these clean formations require sand control, HJ slotting can be used in combination with high rate water packs. For laminated formations, HJ slots used in combination with F&P should result in consistent negative skin completions.

- HJ cutting does not reduce the near wellbore strength of the f ormation as does conventional shape charge perforating. Under some circumstances, this HJ feature in combination with a larger created drainage area may allow a natural completion of formations that currently require sand control.

- The slots modify the stresses in near wellbore zone (relaxed in zone adjacent to the slots, and increased at the tip zone). Formations with strong stress-dependent permeability may encounter significantly reduced completion skin. Moreover, for deep and relatively hard formations, slotting may achieve compressive fracturing in the near-wellbore region that results in significant permeability increase at distance of several slot diameters and dramatic reduction of near wellbore conversion pressure drop. In gas wells it will reduce (or completely eliminate) sometimes very large non-darcy skin.

The main drawback of the current state of HJ technology is its cost. The main cost components are associated with the materials cost (slick water and abrasive material), the horse power pumping charges and rig time. The analysis of HJ operations in the Antrim Shale trial identified the opportunities to reduce the overall cost of the HJ operations, thus making it more competitive to other perforating methods.

HJ cutting is a very slow process. Depending on casing grade and fornation properties (pressure, strength, etc), the HJ slots are cut at a tool speed of 0.6 to 1.2 ft / hr (2 to 4 mm per min) according to the current design parameters. The tool speed also depends on nozzles size, pressure drop across the nozzles, and the size of abrasive material and its concentration. The tool speed can be increased with larger nozzles, higher nozzle pressure drop, coarser abrasives, and higher abrasive concentrations. However, the last three options will require more horsepower and will result in shorter nozzle life. Obviously, the actual operating parameters require economic optimization for given conditions. For instance, if rig time is at a premium, increasing the cutting speed at the expanse of other components may be justified.

The overall cost can also be reduced if several zones (dual slots) are cut simultaneously. The required horsepower can be estimated (for current system design) based on a required rate of 3 bpm and 3,000 psi nozzle pressure drop for a dual slot tool arrangement. With hydraulic fracturing equipment, dual slots can probably be cut simultaneously.

Previously we identified several potentially promising areas of HJ applications within Shell (see Attachment C). After evaluating the Michigan field trial and holding discussions with Shell engineers, we propose to tailor further testing and developrnent of the hydojetting technology to two most promising areas:

- Gulf of Mexico reservoirs, where HJ slotting can be used in combination with various sand control methods or by itself.

- Gas wells in South Texas, where HJ slotting can be used as a starter for hydraulic fracturing or by itself in moderately permeable formations. One of the main attractions to HJ slotting is S.Texas is the frequent need to perforate through two strings of casing, which is very difficult to achieve with conventional perforating techniques.

We have compiled a preliminary pumping cost estimate for 4 hrs of pumping charges (approximately two 1-ft strokes of the HJ tool, which results in two to twelve sets of l80^{o} hydrojetted slots, depending on the number of nozzles used and the injection rate and pressure). We assume (based on the field trial) that the pressure drop of 3000 psi on the dual 6-mm nozzle set requires an injection rate of 3 bpm. The calculations for the slick water are based on Halliburton program StimWin.

The first two cases are for two wellbore configurations in S. Texas in 12,000-ft reservoir:

(1) 3.5-inch casing in the target zone (average of 4.0-inch casing is used) and 2.065 OD Coil tubing:

Depth	Tub ID	Tub OD	Casing ID			
12,000	1.50	2.05	4.00			
Rate (bpm)	F1(psi)	F2(psi)	Ft(psi)	Ftot	HP	PCost/4hrs
3	2196	169	2364	5364	393	2066
6	5675	436	6111	9111	1337	14368
9	9891	759	10650	13650	3004	68634
12	14669	1126	15795	18795	5514	143374

(2) 3.5-in workstring in 5-in casing

Depth	Tub ID	Tub OD	Casing ID			
12,000	2.99	3.50	4.89			
Rate (bpm)	F1(psi)	F2(psi)	Ft(psi)	Ftot	HP	PCost/4hrs
3	147	252	399	3399	249	1172
6	380	651	1032	4032	591	2780
9	663	1135	1798	4798	1056	4962
12	983	1684	2666	5666	1663	8728
15	1334	2286	3620	6620	2428	14567
18	1713	2934	4647	7647	3365	24063
21	2115	3624	5739	8739	4487	40383

The third case is for GOM, 12,000-ft reservoir, 7-inch casing and 3.5 workstring:

Depth	Tub ID	Tub OD	Casing ID			
12,000	2.99	3.50	4.89			
Rate (bpm)	F1(psi)	F2(psi)	Ft(psi)	Ftot	HP	PCost/4hrs
3	147	18	165	3165	232	1091
6	380	46	426	3426	503	2362
9	663	80	742	3742	823	3870
12	983	118	1101	4101	1203	5655
15	1334	160	1494	4494	1648	7747
18	1713	206	1918	4918	2165	10174
21	2115	254	2370	5370	2757	12958

Note :

F1 – pressure loss down workstring, F2 – pressure loss up in the annulus, Ft – total pressure loss in tubular, Ftot = Ft + 3000 psi is the total working HF surface pressure with 3000 psi drop on the HJ nozzles, HP – required horse power, and PCost/4hrs is the HP pumping charge only.

HALLIBURTON ENERGY SERVICES
ACQUIRE Version 2.11

CUSTOMER AND JOB INFORMATION

Customer	S.W.E.P.I.
Contractor	BECKMAN
Lease	LOUD
Location	25954
Formation	ANTRIM
Job Type	NOTCHING JOB
Country	U.S.A.
State	MICHIGAN

Date	08-Feb-1996
County	MONTMORENCY
Town	N/A
Section	N/A
Range	N/A
Permit No	49440
Well No	C1-20
Field Name	ALBERT LOUD

Customer Representative TOM THOMAS

Halliburton Operator S.P.TAYLOR

Ticket No. 872102.1

STAGE DESCRIPTIONS

LOAD HOLE W GEL
START NOTCHING W SAND 1 PPG
FINISH NOTCHING W SAND 1 PPG
FINISH NOTCHING W SAND 1 PPG
FINISH NOTCHING W SAND 1 PPG
FINISH NOTCHING W SAND 1 PPG
FINISH NOTCHING W SAND 1 PPG
FLUSH W GEL H20

WELL CONFIGURATION INFORMATION

Packer Type 0 Depth 0 ft
Bottom Hole Temp. 60.0 Deg F

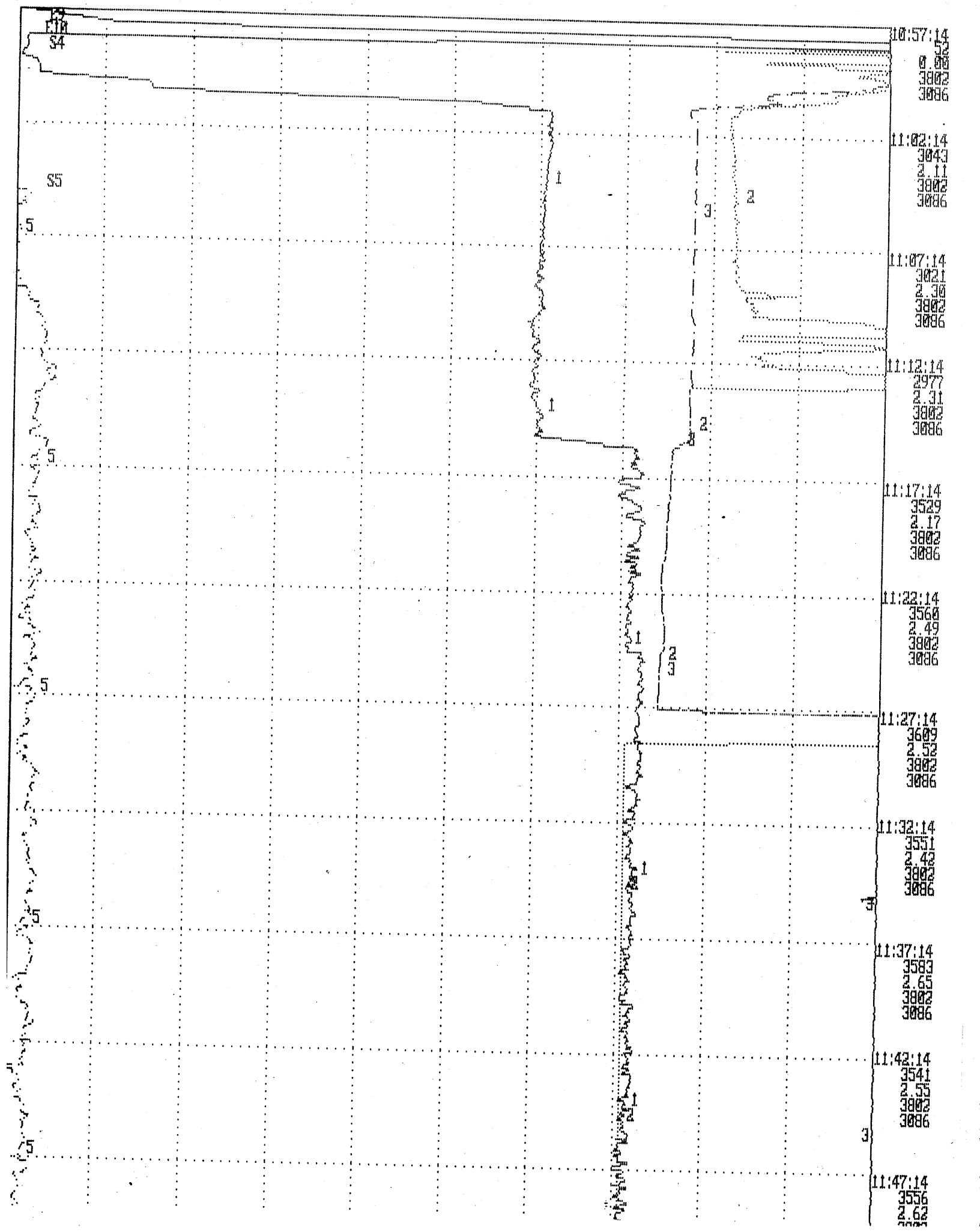
PIPE CONFIGURATION

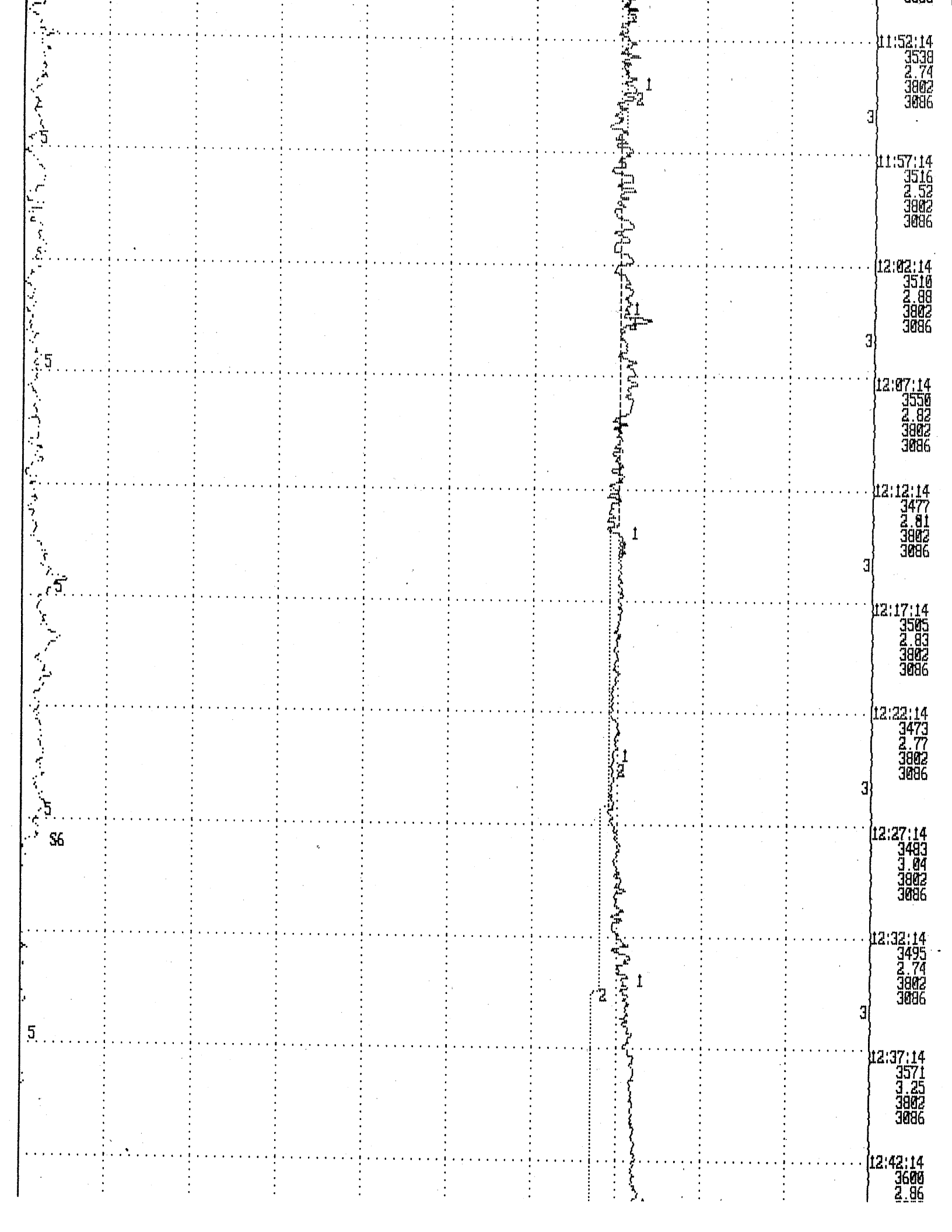
Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1280	1280	5.000	5.500	2.000	2.375
2	1450	1450	5.000	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)

[redacted]


S4
S5
10:57:14
52
0.00
3802
3006
11:02:14
3043
2.11
3802
3006
11:07:14
3021
2.30
3802
3006
11:12:14
2977
2.31
3802
3006
11:17:14
3529
2.17
3802
3006
11:22:14
3560
2.49
3802
3006
11:27:14
3609
2.52
3802
3006
11:32:14
3551
2.42
3802
3006
11:37:14
3583
2.65
3802
3006
11:42:14
3541
2.55
3802
3006
11:47:14
3556
2.62


11:52:14
3538
2.74
3802
3086
11:57:14
3516
2.52
3802
3086
12:02:14
3510
2.88
3802
3086
12:07:14
3550
2.82
3802
3086
12:12:14
3477
2.81
3802
3086
12:17:14
3505
2.83
3802
3086
12:22:14
3473
2.77
3802
3086
12:27:14
3483
3.04
3802
3086
12:32:14
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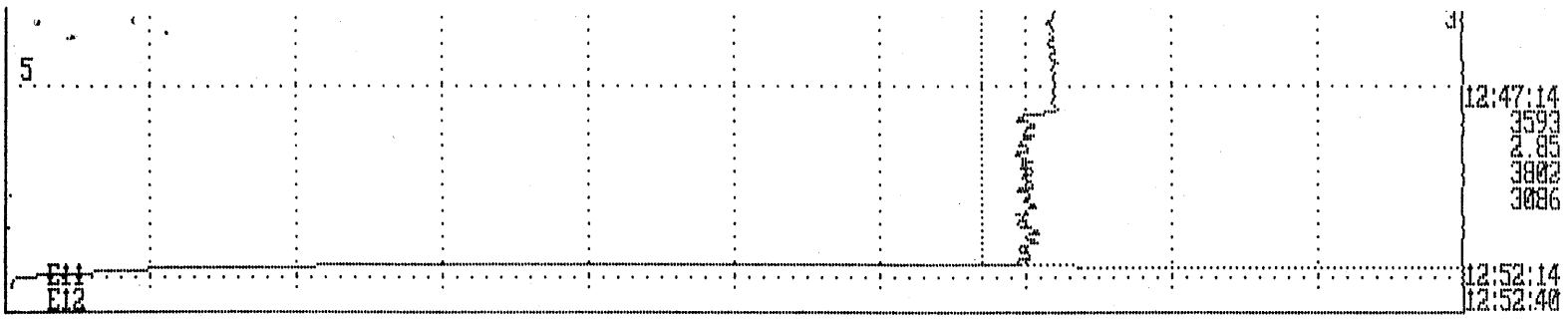
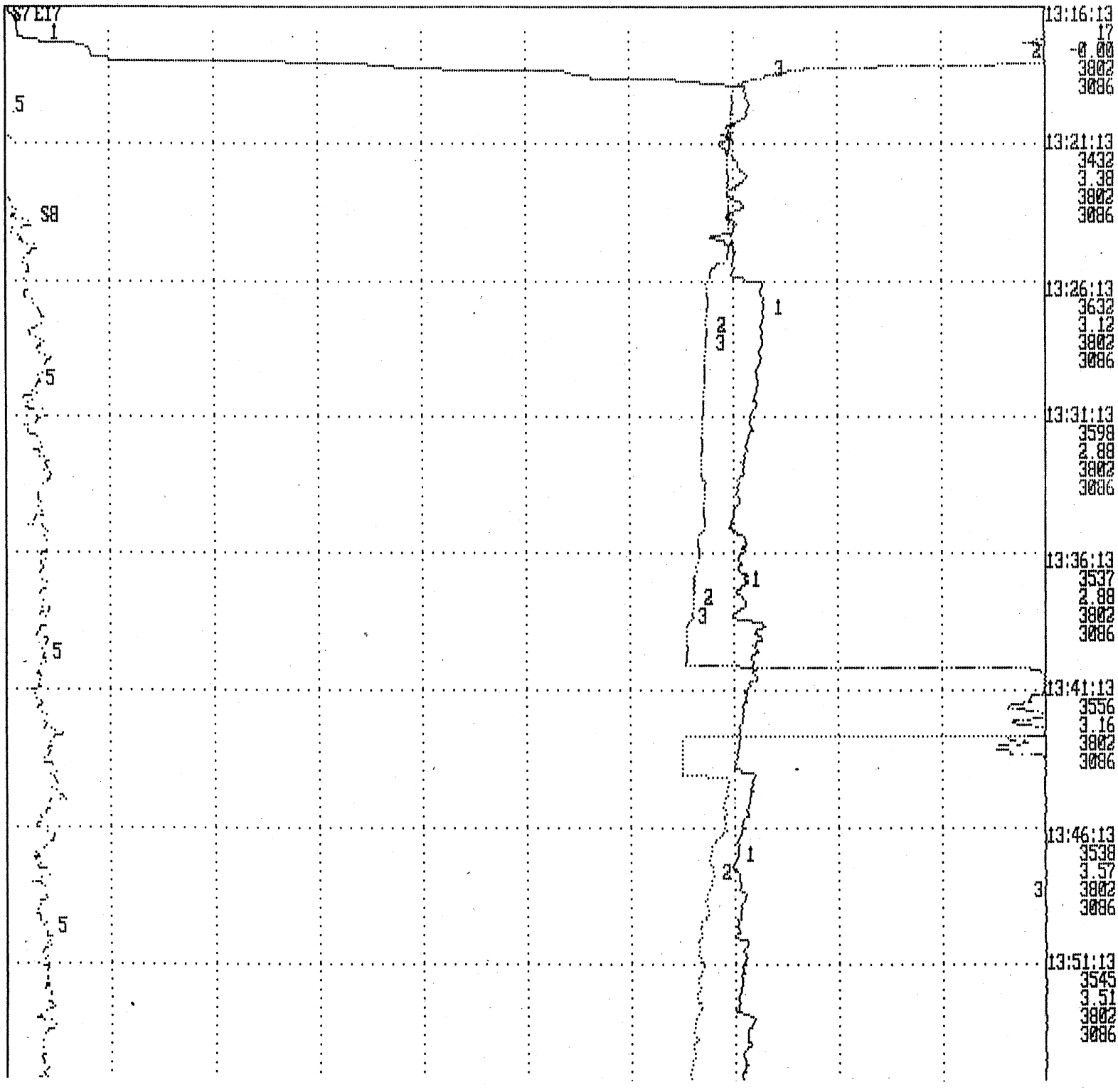
3.25
3802
3086
12:42:14
3600
2.86
S6


5
12:47:14
3593
2.85
3802
3086
E11
E12
12:52:14
12:52:40

PAUSE


E13
E15E14
12:52:59
12:53:55

PAUSE


E17
13:16:13
17
-0.00
3802
3086
5
13:21:13
3432
3.38
3802
3086
SB
13:26:13
3632
3.12
3802
3086
5
13:31:13
3598
2.88
3802
3086
13:36:13
3537
2.88
3802
3086
5
13:41:13
3556
3.16
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5
13:51:13
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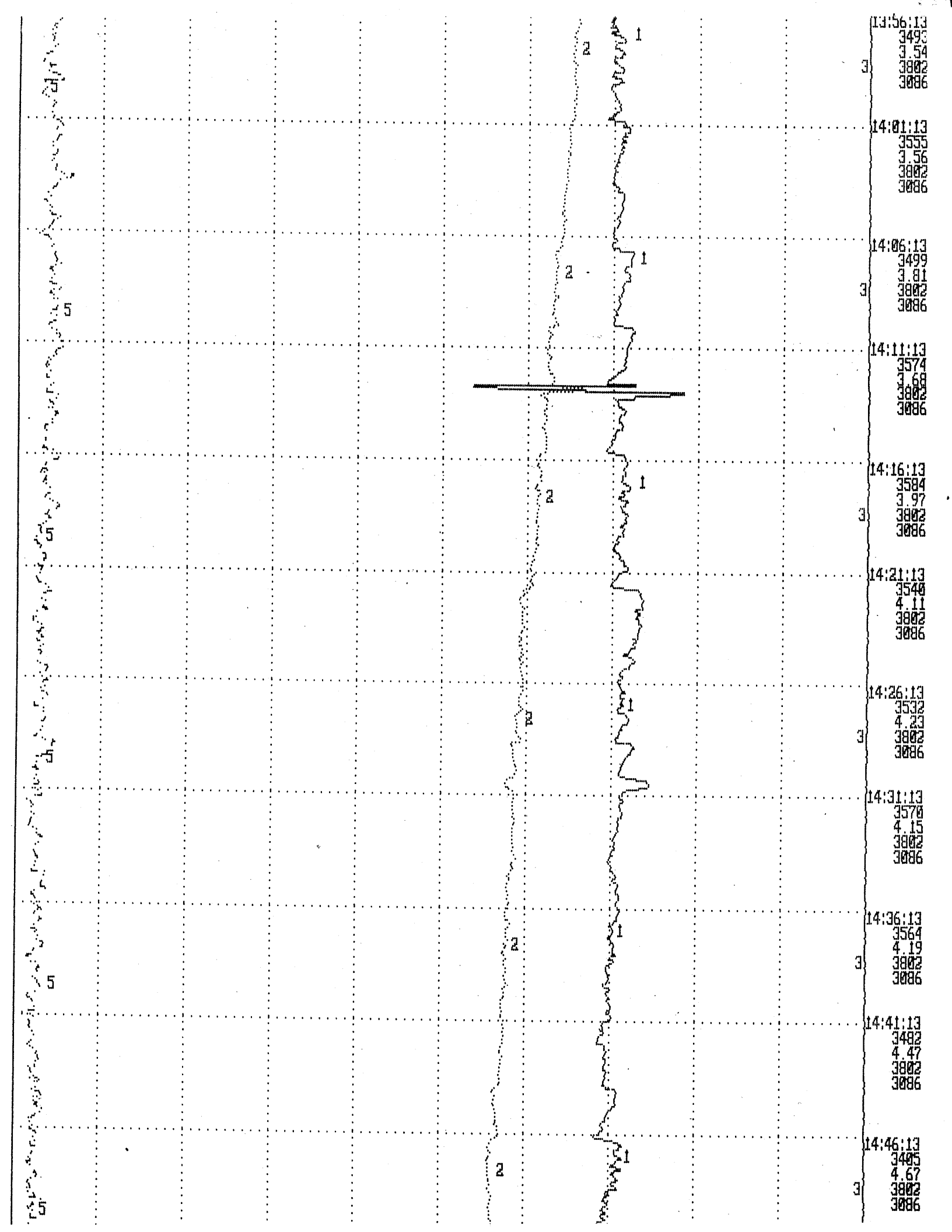
3.51
3802
3086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3.54
3802
3086
14:01:13
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3.56
3802
3086
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3499
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3802
3086
14:11:13
3574
3.68
3802
3086
14:16:13
3584
3.97
3802
3086
14:21:13
3540
4.11
3802
3086
14:26:13
3532
4.23
3802
3086
14:31:13
3570
4.15
3802
3086
14:36:13
3564
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3086
14:46:13
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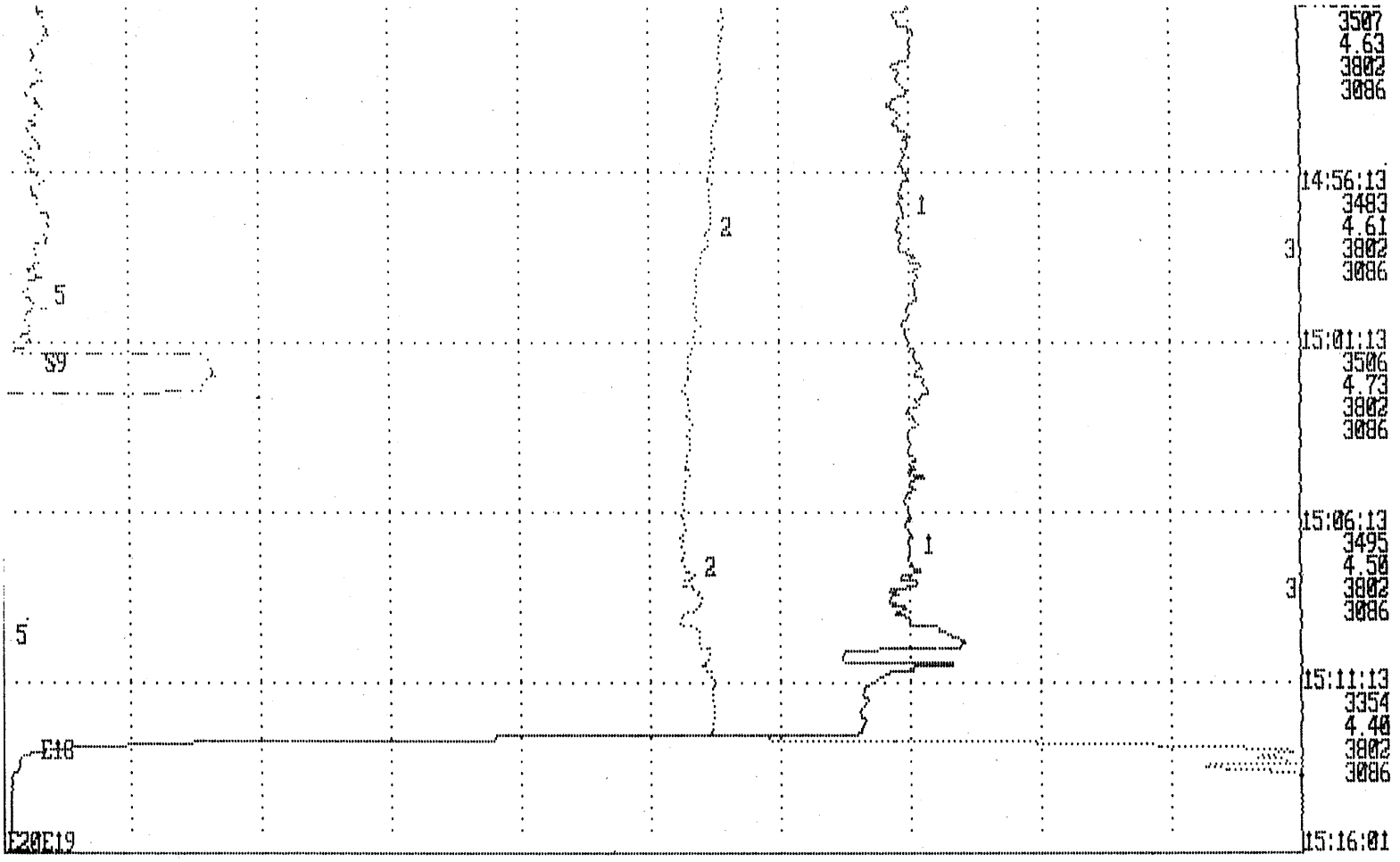
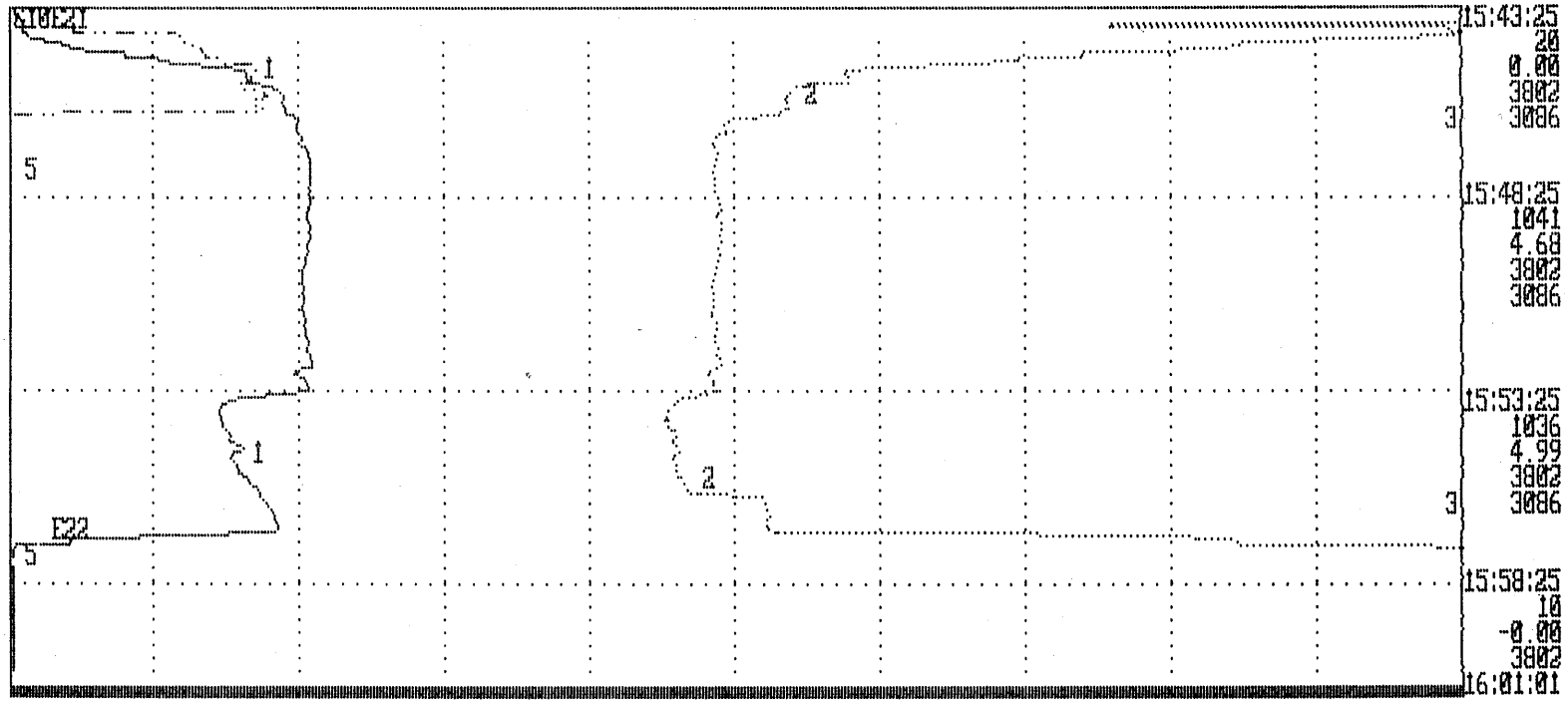
4.67
3802
3086



PAUSE



Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

JOB SUMMARY

JOB START TIME: 08:44:11
JOB END TIME: 16:01:01
JOB DURATION: 07:16:50

STAGES AND EVENTS:

Chart	Time	Slurry Rate (bpm)	Clean Stage Volume (bbl)	Tubing Press. (psi)	Remark
Event #1	08:44:11	0.00	0.00	0	Start Job
Event #2	08:44:20	2.05	0.00	1	Prime Pumps
Event #3	08:48:49	0.00	0.00	6306	Test Lines
Event #4	08:49:47	0.27	0.00	42	Zero Flow Total
Stage #1	08:50:08	0.03	50.17	44	Start Pad
Event #5	08:58:44	5.83	0.00	3734	Zero Sand Total
Stage #2	09:01:09	5.66	124.68	3575	START SAND .3 PPG
Stage #3	09:20:42	10.42	51.29	2301	Start Flush
Event #6	09:25:24	6.98	0.00	786	Stop Pumping
Event #7	09:26:54	0.00	0.00	11	FINISH NOTCHING (PULLED TUBING)
Event #8	09:27:37	0.00	0.00	12	Pause
Event #9	10:57:13	0.00	0.00	50	Resume
Event #10	10:58:02	0.00	0.00	5970	Test Lines
Stage #4	10:59:06	0.71	8.24	27	Start Pad
Stage #5	11:04:11	1.77	216.42	3031	START SAND .2PPG
Stage #6	12:28:07	3.20	72.68	3522	Start Flush
Event #11	12:52:06	0.00	0.00	359	Stop Pumping
Event #12	12:52:39	0.00	0.00	22	Pause
Event #13	12:52:58	0.00	0.00	23	Resume
Event #14	12:53:01	0.00	0.00	23	FINISH NOTCHING (PULLED ONE JOINT TUBING)
Event #15	12:53:51	0.21	0.00	22	Resume
Event #16	12:53:54	0.33	0.00	22	Pause
Event #17	13:16:12	0.00	0.00	17	Resume
Stage #7	13:16:40	0.00	14.32	60	Start Pad
Stage #8	13:23:07	3.05	370.52	3473	START SAND .3 PPG
Stage #9	15:01:30	4.69	54.11	3525	Start Flush
Event #18	15:12:59	1.48	0.00	608	Stop Pumping
Event #19	15:13:54	0.00	0.00	30	FINISH NOTCHING (RUN TUBING TO BOTTOM OF HOLE)
Event #20	15:16:00	0.00	0.00	29	Pause
Event #21	15:43:24	0.00	0.00	20	Resume
Stage #10	15:43:58	0.07	61.66	44	PUMP DOWN BACKSIDE
Event #22	15:57:12	1.94	0.00	514	Stop Pumping
Event #23	16:01:01	0.00	0.00	-3726	End Job

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	08:50:08	09:01:09	00:11:01
2	09:01:09	09:20:42	00:19:33
3	09:20:42	10:59:06	01:38:24
4	10:59:06	11:04:11	00:05:05
5	11:04:11	12:28:07	01:23:56
6	12:28:07	13:16:40	00:48:33
7	13:16:40	13:23:07	00:06:27
8	13:23:07	15:01:30	01:38:23
9	15:01:30	15:43:58	00:42:28
10	15:43:58	16:01:01	00:17:03
Total	08:50:08	16:01:01	07:10:53

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Cl Volume (bbl)	Clean Volume (bbl)
1	43.00	50.17
2	100.00	124.68
3	100.00	51.29
4	100.00	8.24
5	0.00	216.42
6	0.00	72.68
7	0.00	14.32
8	0.00	370.52
9	0.00	54.11
10	0.00	61.66
Tot/Avg	343.00	1024.10

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

STAGE SUMMARY

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	2724	4.38	4.71	0.12
2	3485	6.30	6.51	0.26
3	2274	10.95	10.87	0.00
4	0	0.00	0.00	0.00
5	0	0.00	0.00	0.00
6	0	0.00	0.00	0.00
7	0	0.00	0.00	0.00
8	0	0.00	0.00	0.00
9	0	0.00	0.00	0.00
10	0	0.00	0.00	0.00
Tot/Avg	3086	6.32	6.53	0.22

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	3802	6.04	6.09	0.89
2	3772	10.42	10.41	0.60
3	2325	11.12	10.99	0.00
4	0	0.00	0.00	0.00
5	0	0.00	0.00	0.00
6	0	0.00	0.00	0.00
7	0	0.00	0.00	0.00
8	0	0.00	0.00	0.00
9	0	0.00	0.00	0.00
10	0	0.00	0.00	0.00
Max Job	3802	11.12	10.99	0.89

*Average based on volume.

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

TIME	Casing Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	_____	Stage Vol (bbl)	Job Volume (bbl)	Sand Conc (lb/gal)
08:44:11 Event #1 Start Job							
08:44:20 Event #2 Prime Pumps							
08:48:49 Event #3 Test Lines							
08:49:47 Event #4 Zero Flow Total							
08:50:08 Stage #1 Start Pad							
08:52:54	0	3.76	2.57	0	2.49	2.49	0.11
08:58:44 Event #5 Zero Sand Total							
==== Stage Total 50.17 (bbl) ====							
09:01:09 Stage #2 START SAND .3 PPG							
09:01:48	0	5.69	5.74	0	3.72	53.89	0.38
09:10:48	0	6.14	6.03	0	57.49	107.66	0.27
09:19:48	0	10.35	9.95	0	115.51	165.68	0.23
==== Stage Total 124.68 (bbl) ====							
09:20:42 Stage #3 Start Flush							
09:25:24 Event #6 Stop Pumping							

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

TIME Casing Pr Clean Rate Slurry Rt Stage Vol Job Volume Sand Conc

(PSI) (BPM) (BPM) (BBL) (BBL) (LB/GAL)

09:26:54 Event #7 FINISH NOTCHING (PULLED TUBING)

09:27:37 Event #8 Pause

10:57:13 Event #9 Resume

10:58:02 Event #10 Test Lines

==== Stage Total 51.29 (bbl) ====

10:59:06 Stage #4 Start Pad

==== Stage Total 8.24 (bbl) ====

11:04:11 Stage #5 START SAND .2PPG

11:06:00	0	2.28	1.74	0	3.87	238.25	0.00
11:15:00	0	2.19	2.23	0	23.74	258.12	0.23
11:24:00	0	2.42	2.49	0	45.18	279.56	0.19
11:33:00	0	2.47	2.93	0	67.85	302.23	0.26
11:42:00	0	2.62	2.93	0	91.04	325.43	0.21
11:51:00	0	2.68	2.93	0	114.49	348.87	0.10
12:00:00	0	2.71	3.00	0	138.44	372.82	0.08
12:09:00	0	2.91	3.00	0	163.07	397.45	0.15
12:18:00	0	2.84	3.10	0	187.77	422.15	0.23
12:27:00	0	3.04	3.20	0	213.03	447.42	0.19

==== Stage Total 216.42 (bbl) ====

12:28:07 Stage #6 Start Flush

12:35:57	0	2.79	3.30	0	23.31	474.12	0.00
12:44:57	0	3.08	3.30	0	50.63	501.44	0.00

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

12:52:06 Event #11 Stop Pumping

12:52:39 Event #12 Pause

12:52:58 Event #13 Resume

12:53:01 Event #14 FINISH NOTCHING (PULLED ONE JOINT TUBING)

12:53:51 Event #15 Resume

12:53:54 Event #16 Pause

13:16:12 Event #17 Resume

==== Stage Total 72.68 (bbl) ====

13:16:40 Stage #7 Start Pad

==== Stage Total 14.32 (bbl) ====

13:23:07 Stage #8 START SAND .3 PPG

13:25:01	0	2.97	3.04	0	5.16	542.97	0.32
13:34:01	0	2.98	3.28	0	32.56	570.36	0.30
13:43:01	0	3.46	3.50	0	60.79	598.59	0.39
13:52:01	0	3.49	3.34	0	90.57	628.37	0.43
14:01:01	0	3.54	3.49	0	121.73	659.53	0.45
14:10:01	0	3.77	3.67	0	154.87	692.67	0.46
14:19:01	0	3.79	3.89	0	189.35	727.16	0.38
14:28:01	0	3.98	4.11	0	225.84	763.65	0.35

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

TIME	Casing Pr	Clean Rate	Slurry Rt	Stage Vol	Job Volume	Sand Conc

	(psi)	(bpm)	(bpm)		(bbl)	(bbl)	(lb/gal)
14:37:01	0	4.12	4.20	0	263.41	801.21	0.28
14:46:01	0	4.67	4.32	0	301.86	839.67	0.20
14:55:01	0	4.41	4.52	0	341.19	879.00	0.24

==== Stage Total 370.52 (bbl) ====

15:01:30 Stage #9 Start Flush

15:03:58	0	4.80	4.70	0	11.63	919.96	0.00
15:12:58	0	4.37	1.65	0	53.31	961.64	0.00

15:12:59 Event #18 Stop Pumping

15:13:54 Event #19 FINISH NOTCHING (RUN TUBING TO BOTTOM OF HOLE)

15:16:00 Event #20 Pause

15:43:24 Event #21 Resume

==== Stage Total 54.11 (bbl) ====

15:43:58 Stage #10 PUMP DOWN BACKSIDE

15:52:16	0	4.80	5.11	0	38.27	1000.71	0.00

15:57:12 Event #22 Stop Pumping

==== Stage Total 61.66 (bbl) ====

16:01:01 Event #23 End Job

CUSTOMER:	S.W.E.P.I.	DATE:	08-Feb-1996
WELL DESC:	LOUD C1-20	TICKET #:	872102.1
FORMATION:	ANTRIM	JOB TYPE:	NOTCHING JOB

Customer:	S.W.E.P.I.	Date:	08-Feb-1996
Well Desc:	LOUD C1-20	Ticket #:	872102.1
Formation:	ANTRIM	Job Type:	NOTCHING JOB

CUSTOMER INFORMATION

Customer	S.W.E.P.I.	County	MONTMORENCY
Contractor	BECKMAN	Town	N/A
Lease	LOUD	Section	N/A
Location	25954	Range	N/A
Formation	ANTRIM	Permit No	49440
Job Type	NOTCHING JOB	Well No	C1-20
Country	U.S.A.	Field Name	ALBERT LOUD
State	MICHIGAN		

Customer Representative TOM THOMAS
Halliburton Operator S.P.TAYLOR

REMARKS ABOUT JOB

NOTCHING JOB

2-8-96

THANKS

WELL CONFIGURATION INFORMATION

Packer Type 0 Depth 0 ft
Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1280	1280	5.000	5.500	2.000	2.375
2	1450	1450	5.000	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

JOB SCHEDULE
STAGE DESCRIPTIONS

Stage	Description
1	LOAD HOLE W GEL
2	START NOTCHING W SAND 1 PPG
3	FINISH NOTCHING W SAND 1 PPG
4	FINISH NOTCHING W SAND 1 PPG
5	FINISH NOTCHING W SAND 1 PPG
6	FINISH NOTCHING W SAND 1 PPG
7	FINISH NOTCHING W SAND 1 PPG
8	FLUSH W GEL H2O

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

JOB SCHEDULE
STAGE INFORMATION

	1	2	3	4	5	6	7
Planned Clean Volume (bbl)	43.00	100.00	100.00	100.00	0.00	0.00	0.00
Actual Clean Volume (bbl)	50.17	124.68	51.29	8.24	216.42	72.68	14.32
Proppant Size							
Proppant Type		Sand					
Proppant Volume Coef (gal/lb)		0.04560					
Starting Fluid Rate (bpm)	1.00	5.00	5.00	5.00	0.00	0.00	0.00
Ending Fluid Rate (bpm)	5.00	5.00	5.00	5.00	0.00	0.00	0.00
Planned Prop Conc (lb/gal)	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Planned Gas Rate (bpm)							
Fluid Type	WG-11	WG-11	WG-11	WG-11	WG-11	WG-11	WG-11
Base Fluid Density (lb/gal)	9.40	9.40	9.50	9.50	9.40	9.50	9.50
N Prime	0.7150	0.7150	0.7150	0.7150	0.7150	0.7150	0.7150
K Prime (#s^n/ft2)	0.000560	0.000560	0.000560	0.000560	0.000560	0.000560	0.000560
Viscosity (cp)	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Fluid Concentration (lb/gal)	10.00	10.00	10.00	10.00	10.00	10.00	10.00

	8	9	10
Planned Clean Volume (bbl)	0.00	0.00	0.00
Actual Clean Volume (bbl)	370.52	54.11	61.66
Proppant Size			
Proppant Type			
Proppant Volume Coef (gal/lb)			
Starting Fluid Rate (bpm)	0.00	0.00	0.00
Ending Fluid Rate (bpm)	0.00	0.00	0.00
Planned Prop Conc (lb/gal)	0.00	0.00	0.00
Planned Gas Rate (bpm)			
Fluid Type	WG-11	WG-11	WG-11
Base Fluid Density (lb/gal)	9.40	9.50	9.60
N Prime	0.7150	0.7150	0.7150
K Prime (#s^n/ft2)	0.000560	0.000560	0.000560
Viscosity (cp)	4.5	4.5	4.5
Fluid Concentration (lb/gal)	10.00	10.00	10.00

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

MISCELLANEOUS JOB PARAMETERS

Well Treated Down	Tubing	
Static Column Available	No	
Job Type	Gel	
Gel System	WG-11	
Delayed Crosslinker Used	No	
Surface Earth Temperature	60.0	(Deg F)
Average Wellhead Trmt Press	1600	(psi)
Surface Slurry Temperature	60.0	(Deg F)
Bottom Hole Treating Temp	60.0	(Deg F)
Initial Bottom Hole Pressure	1730	(psi)
Wellbore Fluid Density	8.50	(lb/gal)
Wellbore Fluid n'	0.5300	
Wellbore Fluid K'	0.007300	(#s^n/ft2)
Volume Used for Stage Info	Clean	

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

MATERIALS INVENTORY

Type	Name	Quantity	Concentration
TREATMENT FLUID	10 # GEL		
DISPLACE. FLUID	10 # GEL		
PROPPANT	SAND 10/20	83.00 SKS	
GELLING AGENT	WG-11	LBS	10.00 lb/Mgal
BUFFERING AGENT	HYG-3	LBS	2.50 lb/Mgal
BREAKING AGENT	GBW-3	LBS	
BACTERICADE	BE-3S		0.33 lb/Mgal

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

PROUDLY PERFORMED BY:

Employee	Emp. ID	Equipment	Equip. ID
S.P.TAYLOR	67048	FRAC VAN II	41516
K.AKIYAA	D5101	ARC BLENDER	52131
J.HARRIER	G1728	IRON TRK	53088
D.HIPKINS	E0194	HT-400	52609
D.NEAL	50642	FLATBED	50610
D.KRAGER	48578	BRONCO	94363J
B FRIEND	D9401	PICKUP	94378J
KNOX	H1403	660 CUFT	77295
K.WILLARD	TEMP	610 DUMP	75736

Customer: S.W.E.P.I.
Well Desc: LOUD C1-20
Formation: ANTRIM

Date: 08-Feb-1996
Ticket #: 872102.1
Job Type: NOTCHING JOB

HALLIBURTON ENERGY SERVICES
ACQUIRE Version 2.11

CUSTOMER AND JOB INFORMATION

Customer	S.W.E.P.I.	Date	09-Feb-1996
Contractor	BECKMAN	County	MONTMORENCY
Lease	LOUD	Town	N/A
Location	25954	Section	N/A
Formation	ANTRIM	Range	N/A
Job Type	NOTCHING JOB	Permit No	49440
Country	U.S.A.	Well No	C1-19
State	MICHIGAN	Field Name	ALBERT LOUD

Customer Representative ALAN LOCKWOOD Halliburton Operator D.NELSON Ticket No. 872103

STAGE DESCRIPTIONS

CIRCULATE HOLE WITH GEL
PRESSURE TEST TUBING
PUMP TO GET FRICTION PSI

WELL CONFIGURATION INFORMATION

Packer Type NONE Depth 0 ft
Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1341	1341	4.950	5.500	1.995	2.375
2	1342	1342	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	1340	1341	2

REMARKS ABOUT JOB

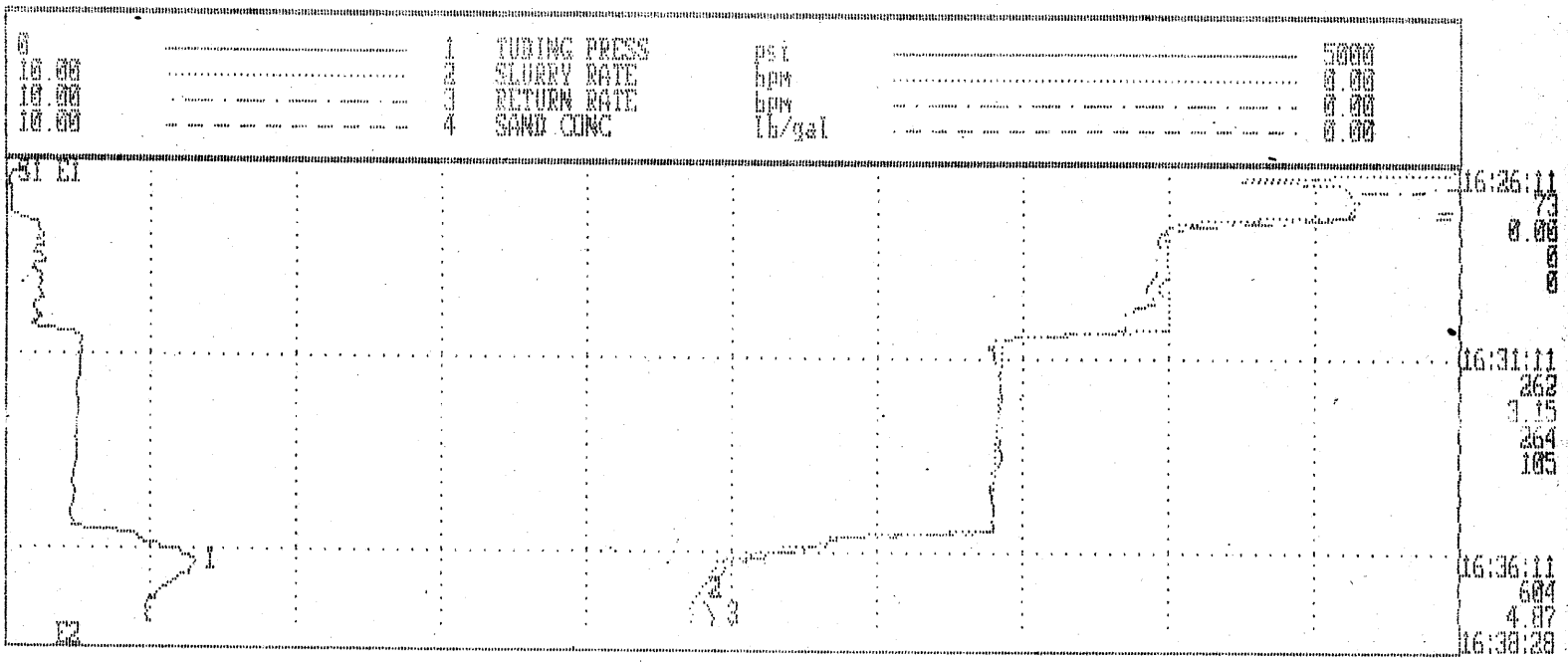
NOTCHING JOB

2-9-96

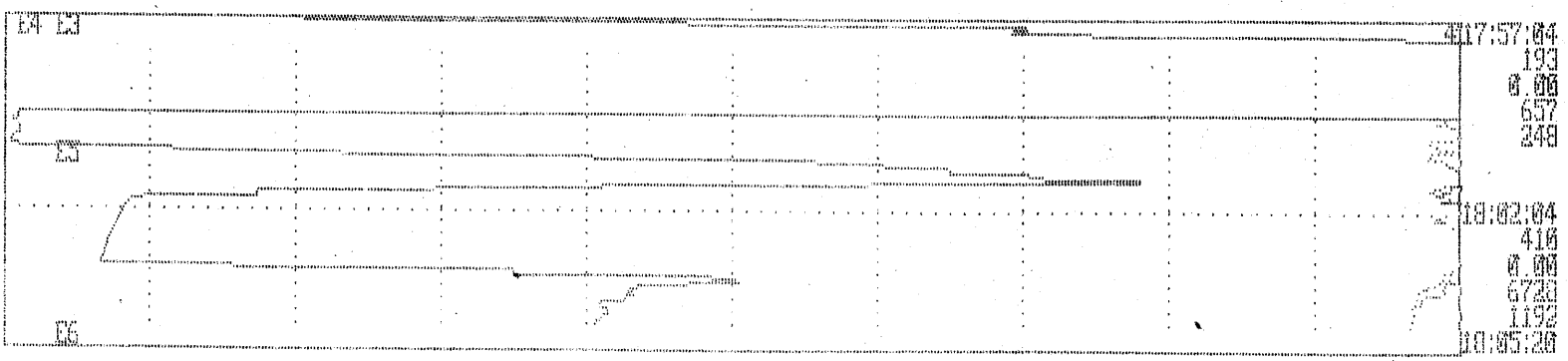
THANKS

REALTIME STRIP CHART

1. Tubing Press (psi)
2. Slurry Rate (bpm)
3. Tubing Press (psi) Max for Job
4. Tubing Press (psi) Avg for Job



PAUSE



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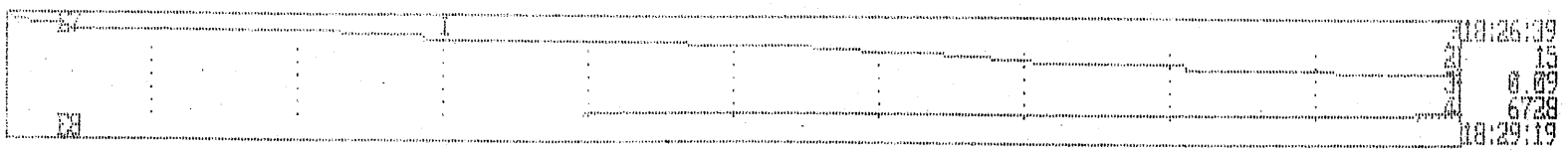

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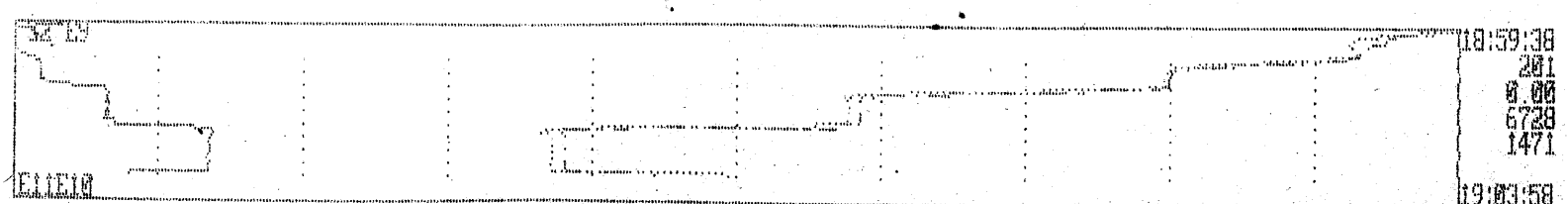


Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 09-Feb-1996
Ticket #: 872103
Job Type: NOTCHING JOB

JOB SUMMARY

JOB START TIME: 16:26:10
JOB END TIME: 19:04:36
JOB DURATION: 02:38:26

STAGES AND EVENTS:

Chart	Time	Slurry Rate (bpm)	Clean Stage Volume (bbl)	Tubing Press. (psi)	Remark
Event #1	16:26:10	0.00	0.00	0	Start Job
Stage #1	16:26:22	0.45	36.59	55	CIRCULATE HOLE
Event #2	16:38:27	0.09	0.00	10	Pause
Event #3	17:57:03	0.00	0.00	193	Resume
Event #4	17:57:12	0.03	0.00	2107	Test Lines
Event #5	18:00:04	0.00	0.00	51	TEST TUBING
Event #6	18:05:19	0.07	0.00	285	Pause
Event #7	18:26:38	0.11	0.00	13	Resume
Event #8	18:29:18	0.47	0.00	139	Pause
Event #9	18:59:37	0.00	0.00	201	Resume
Stage #2	18:59:43	0.12	15.62	123	PUMP TO EST. FRICTION PRESSURE
Event #10	19:03:41	1.25	0.00	7	Resume
Event #11	19:03:57	0.02	0.00	-10	Pause
Event #12	19:04:33	0.00	0.00	-8	Resume
Event #13	19:04:36	0.00	0.00	-8	End Job

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 09-Feb-1996
Ticket #: 872103
Job Type: NOTCHING JOB

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	16:26:22	18:59:43	02:33:21
2	18:59:43	19:04:36	00:04:53
Total	16:26:22	19:04:36	02:38:14

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Cl Volume (bbl)	Clean Volume (bbl)
1	35.00	36.59
2	100.00	15.62
Tot/Avg	135.00	52.22

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	511	2.86	2.92	0.27
2	312	3.44	3.37	0.00
Tot/Avg	1295	2.44	2.75	0.27

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	6728	5.29	5.19	0.27
2	702	6.39	6.26	0.00
Max Job	6728	6.39	6.26	0.27

*Average based on volume.

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 09-Feb-1996
Ticket #: 872103
Job Type: NOTCHING JOB

DATA LISTING

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
16:26:10 Event #1 Start Job							
16:26:22 Stage #1 CIRCULATE HOLE							
16:26:56	15	0.75	0.69	0.00	0.14	0.76	0
16:27:56	108	2.02	2.06	0.00	0.39	1.02	5
16:28:56	88	2.00	2.09	0.00	2.86	3.49	4
16:29:56	90	2.00	2.28	0.00	5.01	5.63	4
16:30:56	258	3.14	3.22	0.00	7.30	7.92	20
16:31:56	245	3.15	3.15	0.00	10.32	11.44	19
16:32:56	247	3.17	3.15	0.00	14.13	14.75	19
16:33:56	242	3.19	3.17	0.00	17.28	17.90	19
16:34:56	233	3.20	3.20	0.00	20.66	21.28	18
16:35:56	461	4.34	4.34	0.00	24.09	24.71	49
16:36:56	596	5.17	5.11	0.00	29.26	29.89	76
16:37:56	484	5.26	5.13	0.00	34.65	35.27	62
16:38:27 Event #2 Pause							
17:57:03 Event #3 Resume							
17:57:12 Event #4 Test Lines							
17:57:52	6603	0.00	0.00	0.00	36.59	37.22	0
17:58:52	5871	0.00	0.00	0.00	36.59	37.22	0
17:59:52	46	0.00	0.00	0.00	36.59	37.22	0
18:00:04 Event #5 TEST TUBING							
18:00:47	2906	0.08	0.00	0.00	36.59	37.22	6
18:01:47	474	0.00	0.00	0.00	36.59	37.22	0
18:02:47	362	0.00	0.00	0.00	36.59	37.22	0
18:03:47	2441	0.08	0.05	0.00	36.59	37.22	5
18:04:47	2055	0.33	0.34	0.00	36.59	37.22	17

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 09-Feb-1996
Ticket #: 872103
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
18:05:19 Event #6 Pause							
18:26:38 Event #7 Resume							
18:27:31	2869	0.00	0.00	0.00	36.59	37.22	0
18:28:31	5874	0.00	0.00	0.00	36.59	37.22	0
18:29:18 Event #8 Pause							
18:59:37 Event #9 Resume							

Stage Total 36.59

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 09-Feb-1996
Ticket #: 872103
Job Type: NOTCHING JOB

DATA LISTING

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
16:26:10 Event #1 Start Job							
16:26:22 Stage #1 CIRCULATE HOLE							
16:26:56	15	0.75	0.69	0.00	0.14	0.76	0
16:27:56	108	2.02	2.06	0.00	0.39	1.02	5
16:28:56	88	2.00	2.09	0.00	2.86	3.49	4
16:29:56	90	2.00	2.28	0.00	5.01	5.63	4
16:30:56	258	3.14	3.22	0.00	7.30	7.92	20
16:31:56	245	3.15	3.15	0.00	10.82	11.44	19
16:32:56	247	3.17	3.15	0.00	14.13	14.75	19
16:33:56	242	3.19	3.17	0.00	17.28	17.90	19
16:34:56	233	3.20	3.20	0.00	20.66	21.28	18
16:35:56	461	4.34	4.34	0.00	24.09	24.71	49
16:36:56	596	5.17	5.11	0.00	29.26	29.89	76
16:37:56	484	5.26	5.13	0.00	34.65	35.27	62
16:38:27 Event #2 Pause							
17:57:03 Event #3 Resume							

17:57:52	6603	0.00	0.00	0.00	36.59	37.22	0

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 09-Feb-1996
Ticket #: 872103
Job Type: NOTCHING JOB

DATA LISTING

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
16:26:10 Event #1 Start Job							
16:26:22 Stage #1 CIRCULATE HOLE							
16:26:56	15	0.75	0.69	0.00	0.14	0.76	0
16:27:56	108	2.02	2.06	0.00	0.39	1.02	5
16:28:56	88	2.00	2.09	0.00	2.86	3.49	4
16:29:56	90	2.00	2.28	0.00	5.01	5.63	4
16:30:56	258	3.14	3.22	0.00	7.30	7.92	20
16:31:56	245	3.15	3.15	0.00	10.82	11.44	19
16:32:56	247	3.17	3.15	0.00	14.13	14.75	19
16:33:56	242	3.19	3.17	0.00	17.28	17.90	19
16:34:56	233	3.20	3.20	0.00	20.66	21.28	18
16:35:56	461	4.34	4.34	0.00	24.09	24.71	49
16:36:56	596	5.17	5.11	0.00	29.26	29.89	76
16:37:56	484	5.26	5.13	0.00	34.65	35.27	62
16:38:27 Event #2 Pause							
17:57:03 Event #3 Resume							
17:57:12 Event #4 Test Lines							
17:57:52	6603	0.00	0.00	0.00	36.59	37.22	0
17:58:52	5871	0.00	0.00	0.00	36.59	37.22	0
17:59:52	46	0.00	0.00	0.00	36.59	37.22	0
18:00:04 Event #5 TEST TUBING							
18:00:47	2906	0.08	0.00	0.00	36.59	37.22	6
18:01:47	474	0.00	0.00	0.00	36.59	37.22	0
18:02:47	362	0.00	0.00	0.00	36.59	37.22	0
18:03:47	2441	0.08	0.05	0.00	36.59	37.22	5
18:04:47	2055	0.33	0.34	0.00	36.59	37.22	17

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 09-Feb-1996
Ticket #: 872103
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
18:05:19 Event #6 Pause							
18:26:38 Event #7 Resume							
18:27:31	2869	0.00	0.00	0.00	36.59	37.22	0
18:28:31	5874	0.00	0.00	0.00	36.59	37.22	0
18:29:18 Event #8 Pause							
18:59:37 Event #9 Resume							
==== Stage Total 36.59 (bbl) ====							
18:59:43 Stage #2 PUMP TO EST. FRICTION PRESSURE							
19:00:25	17	0.83	0.73	0.00	0.94	38.15	0
19:01:25	336	4.19	4.02	0.00	3.26	40.48	34
19:02:25	694	6.36	6.19	0.00	7.94	45.15	108
19:03:25	677	6.28	6.18	0.00	14.55	51.76	104
19:03:41 Event #10 Resume							
19:03:57 Event #11 Pause							
19:04:33 Event #12 Resume							
==== Stage Total 15.62 (bbl) ====							
19:04:36 Event #13 End Job							

CUSTOMER:	S.W.E.P.I.	DATE:	10-Feb-1996
WELL DESC:	LOUD C1-19	TICKET #:	872103.4
FORMATION:	ANTRIM	JOB TYPE:	WATER FRAC

Customer:	S.W.E.P.I.	Date:	10-Feb-1996
Well Desc:	LOUD C1-19	Ticket #:	872103.4
Formation:	ANTRIM	Job Type:	WATER FRAC

CUSTOMER INFORMATION

Customer	S.W.E.P.I.	County	MONTMORENCY
Contractor	BECKMAN	Town	29N
Lease	LOUD	Section	19
Location	25954	Range	3E
Formation	ANTRIM	Permit No	49096
Job Type	WATER FRAC	Well No	C1-19
Country	U.S.A.	Field Name	ALBERT LOUD
State	MICHIGAN		

Customer Representative ALAN LOCKWOOD
Halliburton Operator D.NELSON

REMARKS ABOUT JOB

FRAC JOB

2-10-96

THANKS

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

WELL CONFIGURATION INFORMATION

Packer Type NONE Depth 0 ft
Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1160	1160	4.950	5.500	1.995	2.375
2	1261	1261	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	1260	1261	2

Customer:	S.W.E.P.I.	Date:	10-Feb-1996
Well Desc:	LOUD C1-19	Ticket #:	872103.4
Formation:	ANTRIM	Job Type:	WATER FRAC

JOB SCHEDULE
STAGE DESCRIPTIONS

Stage	Description
1	PUMP AT CUSTOMER REQUEST

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

JOB SCHEDULE
STAGE INFORMATION

	1	2	3	4
Planned Clean Volume (bbl)	0.00	0.00	0.00	0.00
Actual Clean Volume (bbl)	4.36	0.91	73.96	35.80
Proppant Size				
Proppant Type				
Proppant Volume Coef (gal/lb)				
Planned Fluid Rate (bpm)	0.00	0.00	0.00	0.00
Planned Prop Conc (lb/gal)	0.00	0.00	0.00	0.00
Planned Gas Rate (bpm)				
Fluid Type	10# NaCl	10# NaCl	10# NaCl	10# NaCl
Base Fluid Density (lb/gal)	9.60	9.60	9.60	9.60
N Prime	1.0000	1.0000	1.0000	1.0000
K Prime (#s^n/ft2)	0.000036	0.000036	0.000036	0.000036
Viscosity (cp)	1.7	1.7	1.7	1.7

Customer:	S.W.E.P.I.	Date:	10-Feb-1996
Well Desc:	LOUD C1-19	Ticket #:	872103.4
Formation:	ANTRIM	Job Type:	WATER FRAC

MISCELLANEOUS JOB PARAMETERS

Well Treated Down	Annulus	
Static Column Available	No	
Job Type	Gel	
Gel System	9.6# BRINE	
Delayed Crosslinker Used	No	
Surface Earth Temperature	60.0	(Deg F)
Average Wellhead Trmt Press	1500	(psi)
Surface Slurry Temperature	50.0	(Deg F)
Bottom Hole Treating Temp	60.0	(Deg F)
Initial Bottom Hole Pressure	2100	(psi)
Wellbore Fluid Density	9.60	(lb/gal)
Wellbore Fluid n'	0.7150	
Wellbore Fluid K'	0.000560	(#s^n/ft2)
Volume Used for Stage Info	Clean	

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

PROUDLY PERFORMED BY:

Employee	Emp. ID	Equipment	Equip. ID
D.NELSON	D0933	FRAC VAN II	41516
K.AKIYAMA	D5101	ARC BLENDER	53086
J.HARRIER	G1728	IRON TRK	53088
D.HIPKINS	E0194	HT-400	52609
B FRIEND	D9401	PICKUP	94378J
M.KNOX	H1403	SAND DUMP	75736

OPERATOR LOG

Chart	Time	Slurry Rate (bpm)	Clean Stage Volume (bbl)	Tubing Press. (psi)	Remark
Event #1	08:44:11	0.00	0.00	0	Start Job
Event #2	08:44:20	2.05	0.00	1	Prime Pumps
Event #3	08:48:49	0.00	0.00	6306	Test Lines
Event #4	08:49:47	0.27	0.00	42	Zero Flow Total
Stage #1	08:50:08	0.03	50.17	44	Start Pad
Event #5	08:58:44	5.83	0.00	3734	Zero Sand Total
Stage #2	09:01:09	5.65	124.68	3597	START SAND .3 PPG
Stage #3	09:20:42	10.42	51.29	2301	Start Flush
Event #6	09:25:24	6.98	0.00	786	Stop Pumping
Event #7	09:26:54	0.00	0.00	11	FINISH NOTCHING (PULLED TUBING)
Event #8	09:27:37	0.00	0.00	12	Pause
Event #9	10:57:13	0.00	0.00	50	Resume
Event #10	10:58:02	0.00	0.00	5970	Test Lines
Stage #4	10:59:06	0.71	8.24	27	Start Pad
Stage #5	11:04:11	1.77	216.42	3031	START SAND .2PPG
Stage #6	12:28:07	3.20	72.68	3522	Start Flush
Event #11	12:52:06	0.00	0.00	359	Stop Pumping
Event #12	12:52:39	0.00	0.00	22	Pause
Event #13	12:52:58	0.00	0.00	23	Resume
Event #14	12:53:01	0.00	0.00	23	FINISH NOTCHING (PULLED ONE JOINT TUBING)
Event #15	12:53:51	0.21	0.00	22	Resume
Event #16	12:53:54	0.33	0.00	22	Pause
Event #17	13:16:12	0.00	0.00	17	Resume
Stage #7	13:16:40	0.00	14.32	60	Start Pad
Stage #8	13:23:07	3.05	370.52	3485	START SAND .3 PPG
Stage #9	15:01:30	4.69	54.11	3525	Start Flush
Event #18	15:12:59	1.48	0.00	608	Stop Pumping
Event #19	15:13:54	0.00	0.00	30	FINISH NOTCHING (RUN TUBING TO BOTTOM OF HOLE)
Event #20	15:16:00	0.00	0.00	29	Pause
Event #21	15:43:24	0.00	0.00	20	Resume
Stage #10	15:43:58	0.07	61.66	44	PUMP DOWN BACKSIDE
Event #22	15:57:12	1.94	0.00	514	Stop Pumping
Event #23	16:01:01	0.00	0.00	-3726	End Job

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	17:47:34	18:00:20	00:12:46
2	18:00:20	18:03:18	00:02:58
3	18:03:18	18:24:26	00:21:08
4	18:24:26	18:36:42	00:12:16
Total	17:47:34	18:36:42	00:49:08

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Cl Volume (bbl)	Clean Volume (bbl)
1	0.00	4.36
2	0.00	0.91
3	0.00	73.96
4	0.00	35.80
Tot/Avg	0.00	115.02

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Annulus Pressure (psi)	Clean Rate (bpm)	Slurry Rate (bpm)
1	955	0.44	0.44
2	1157	0.31	0.31
3	1006	4.06	4.06
4	1275	10.04	10.04
Tot/Avg	1026	3.05	3.05

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Annulus Pressure (psi)	Clean Rate (bpm)	Slurry Rate (bpm)
1	1432	1.85	1.85
2	1465	1.50	1.50
3	1250	10.16	10.16
4	1396	12.08	12.08
Max Job	1465	12.08	12.08

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

DATA LISTING

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
17:47:28 Event #1 Start Job							
17:47:34 Stage #1 LOAD AND BREAK FORMATION							
17:47:53	24	0.19	0.00	0.25	0.25	725	0
17:48:23	318	0.54	0.54	0.41	0.42	883	4
17:48:46 Event #2 Break Formation Annulus Press 1197 (psi) Clean Rate 1.33 (bpm)							
17:48:51	1099	0.12	0.12	0.52	0.53	1687	3
17:49:21	992	0.12	0.12	0.61	0.61	1580	3
17:49:51	978	0.44	0.44	0.78	0.78	1548	11
17:50:21	1368	0.77	0.77	1.26	1.26	1929	26
17:50:51	1389	0.25	0.25	1.40	1.41	1969	8
17:51:21	1374	0.19	0.19	1.51	1.51	1958	6
17:51:51	1381	0.18	0.18	1.60	1.60	1965	6
17:52:21	986	0.00	0.00	1.65	1.66	1614	0
17:52:27 Event #3 ISIP Annulus Press 810 (psi)							
17:52:49	589	0.00	0.00	1.65	1.66	1218	0
17:53:19	331	0.00	0.00	1.65	1.66	960	0
17:53:49	190	0.00	0.00	1.65	1.66	818	0
17:54:19	121	0.00	0.00	1.65	1.66	750	0
17:54:49	1098	0.92	0.92	1.76	1.76	1657	25
17:55:19	1423	0.53	0.53	2.23	2.23	1994	19
17:55:49	1411	0.52	0.52	2.48	2.48	1983	18
17:56:19	1355	0.54	0.54	2.74	2.74	1927	18
17:56:49	1290	0.59	0.59	3.03	3.03	1862	19
17:57:19	1288	0.57	0.57	3.33	3.33	1860	18
17:57:49	1294	0.53	0.53	3.61	3.61	1869	17
17:58:19	1256	0.56	0.56	3.88	3.88	1831	17
17:58:49	1215	0.60	0.60	4.17	4.17	1790	18
17:59:18 Event #4 ISIP Annulus Press 830 (psi)							
17:59:18	830	0.00	0.00	4.36	4.36	1459	0
17:59:47	756	0.00	0.00	4.36	4.36	1384	0
18:00:17	642	0.00	0.00	4.36	4.36	1271	0

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
==== Stage Total 4.36 (bbl) ====							
18:00:20 Stage #2 PUMP							
18:00:45	1465	0.73	0.73	0.36	4.72	2039	26
18:01:15	1359	0.19	0.19	0.50	4.86	1951	6
18:01:45	1313	0.16	0.16	0.59	4.95	1907	5
18:02:15	1319	0.15	0.15	0.66	5.02	1913	5
18:02:45	1317	0.16	0.16	0.74	5.10	1911	5
18:02:56 Event #5 SURGE OFF							
18:03:13	13	0.72	0.72	0.85	5.21	646	0
==== Stage Total 0.91 (bbl) ====							
18:03:18 Stage #3 PUMP							
18:03:41	1115	1.05	1.05	0.32	5.60	1685	29
18:04:11	1108	1.10	1.10	0.87	6.14	1679	30
18:04:41	1082	1.11	1.11	1.42	6.69	1655	30
18:05:11	1025	1.14	1.14	1.99	7.26	1599	29
18:05:41	1012	1.14	1.14	2.56	7.83	1588	28
18:06:11	1039	1.51	1.51	3.17	8.45	1613	39
18:06:41	1068	1.57	1.57	3.96	9.23	1645	41
18:07:11	1044	1.58	1.58	4.74	10.01	1623	40
18:07:41	1033	1.58	1.58	5.53	10.80	1616	40
18:08:11	1021	1.58	1.58	6.32	11.59	1607	40
18:08:41	1006	1.80	1.80	7.13	12.40	1593	44
18:09:11	1018	2.05	2.05	8.14	13.41	1607	51
18:09:41	1009	2.05	2.05	9.16	14.44	1603	51
18:10:11	1020	2.59	2.59	10.31	15.58	1615	65
18:10:41	1016	2.59	2.59	11.61	16.88	1617	64
18:11:11	1003	3.12	3.12	13.03	18.31	1606	77
18:11:41	994	3.17	3.17	14.58	19.85	1604	77
18:12:11	1002	3.55	3.55	16.33	21.61	1616	87
18:12:41	997	3.66	3.66	18.11	23.39	1611	89
18:13:11	1010	4.03	4.03	20.10	25.37	1621	100
18:13:41	1025	5.03	5.03	22.51	27.78	1628	126
18:14:11	1026	5.18	5.18	25.03	30.30	1627	130
18:14:41	1057	5.96	5.96	28.00	33.27	1650	154
18:15:11	1056	5.97	5.97	30.98	36.26	1649	155
18:15:41	1070	6.16	6.16	34.00	39.27	1661	162
18:16:11	1106	7.04	7.04	37.45	42.72	1686	191

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
18:16:41	1122	7.06	7.06	40.98	46.26	1702	194
18:17:11	1127	7.07	7.07	44.52	49.80	1707	195
18:17:41	1129	7.03	7.03	48.05	53.32	1709	194
18:18:11	1151	7.24	7.24	51.57	56.84	1729	204
18:18:41	1248	10.09	10.09	56.22	61.49	1784	309
18:19:11	1243	10.13	10.13	61.29	66.56	1778	309
18:19:41	1246	10.13	10.13	66.35	71.62	1782	309
18:20:11	1242	10.15	10.15	71.42	76.69	1778	309
18:20:35 Event #6 ISIP Annulus Press 862 (psi)							
18:20:39	854	2.51	2.51	72.81	78.08	1475	53
18:21:09	817	0.00	0.00	73.42	78.70	1446	0
18:21:39	794	0.00	0.00	73.52	78.79	1423	0
18:22:09	774	0.02	0.02	73.67	78.94	1403	0
18:22:39	757	0.00	0.00	73.67	78.94	1386	0
18:23:09	741	0.00	0.00	73.67	78.94	1370	0
18:23:39	725	0.00	0.00	73.67	78.94	1354	0
18:24:09	710	0.73	0.73	73.92	79.19	1339	13
==== Stage Total 73.96 (bbl) ====							
18:24:26 Stage #4 PUMP							
18:24:37	1245	8.14	8.14	1.07	80.30	1811	248
18:25:07	1368	10.95	10.95	6.05	85.28	1890	367
18:25:37	1373	12.06	12.06	11.91	91.14	1875	406
18:26:07	1355	12.06	12.06	17.93	97.16	1857	400
18:26:37	1348	12.05	12.05	23.95	103.18	1850	398
18:27:07	1355	12.03	12.03	29.98	109.21	1858	400
18:27:37	1269	1.55	1.55	35.73	114.96	1895	48
18:27:48 Event #7 ISIP Annulus Press 941 (psi)							
18:28:05	886	0.00	0.00	35.80	115.02	1514	0
18:28:10 Event #8 Stop Pumping							
18:28:33	848	0.00	0.00	35.80	115.02	1477	0
18:29:03	823	0.00	0.00	35.80	115.02	1452	0
18:29:33	803	0.00	0.00	35.80	115.02	1432	0
18:30:03	787	0.00	0.00	35.80	115.02	1415	0
18:30:33	768	0.00	0.00	35.80	115.02	1397	0
18:31:03	758	0.00	0.00	35.80	115.02	1386	0
18:31:33	745	0.00	0.00	35.80	115.02	1374	0

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
18:32:03	733	0.00	0.00	35.80	115.02	1361	0
18:32:33	721	0.00	0.00	35.80	115.02	1349	0
18:33:03	709	0.00	0.00	35.80	115.02	1338	0

18:33:13 Event #9 5 Min Shutin Pres. Annulus Press 705 (psi)

18:33:31	699	0.00	0.00	35.80	115.02	1327	0
18:34:01	531	0.00	0.00	35.80	115.02	1160	0
18:34:31	164	0.00	0.00	35.80	115.02	792	0
18:35:01	7	0.00	0.00	35.80	115.02	699	0
18:35:31	5	0.00	0.00	35.80	115.02	699	0
18:36:01	3	0.00	0.00	35.80	115.02	699	0
18:36:31	3	0.00	0.00	35.80	115.02	699	0

==== Stage Total 35.80 (bbl) ====

18:36:42 Event #10 End Job

HALLIBURTON ENERGY SERVICES
ACQUIRE Version 2.11

CUSTOMER AND JOB INFORMATION

Customer	S.W.E.P.I.	Date	10-Feb-1996
Contractor	BECKMAN	County	MONTMORENCY
Lease	LOUD	Town	29N
Location	25954	Section	19
Formation	ANTRIM	Range	3E
Job Type	NOTCHING JOB	Permit No	49096
Country	U.S.A.	Well No	C1-19
State	MICHIGAN	Field Name	ALBERT LOUD

Customer Representative ALAN LOCKWOOD Halliburton Operator D.NELSON Ticket No. 872103.1

STAGE DESCRIPTIONS

ESTABLISH RATE THRU JETS
START SAND
START FLUSH

WELL CONFIGURATION INFORMATION

Packer Type NONE Depth 0 ft
Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1341	1341	4.950	5.500	1.995	2.375
2	1342	1342	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	1340	1341	2

REMARKS ABOUT JOB

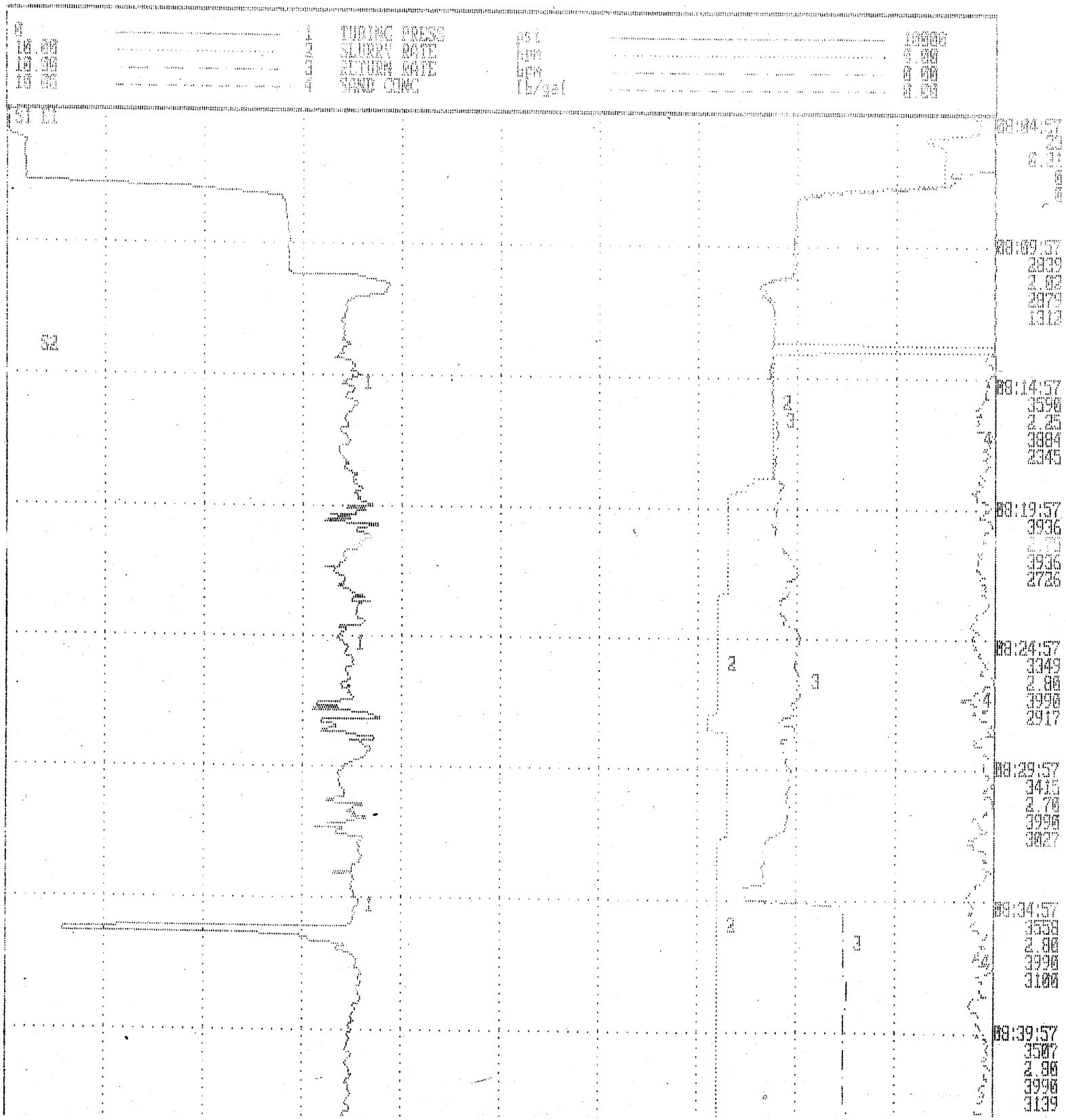
NOTCHING JOB

2-10-96

THANKS

REALTIME STRIP CHART

1. Tubing Press (psi)
2. Slurry Rate (bpm)
3. Tubing Press (psi) Max for Job
4. Tubing Press (psi) Avg for Job



08:44:57
3456
2.80
3990
3190
08:49:57
3487
2.90
3990
3210
08:54:57
3387
2.90
3990
3236
08:59:57
3391
2.90
3990
3252
09:04:57
3453
3.00
4014
3268
09:09:57
3349
3.00
4014
3286
09:14:57
3394
3.00
4014
3294
09:19:57
3312
3.00
4014
3306
09:24:57
3455
2.74
4014
3314
09:29:57
4736
3.14
4782
3393
09:34:57
2943
2.56
4782
3468

PAUSE

PAUSE

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.1
Job Type: NOTCHING JOB

JOB SUMMARY

JOB START TIME: 08:04:56
JOB END TIME: 10:42:05
JOB DURATION: 02:37:09

STAGES AND EVENTS:

Chart	Time	Slurry Rate (bpm)	Slurry Stage Volume (bbl)	Tubing Press. (psi)	Remark
Event #1	08:04:56	0.00	0.00	0	Start Job
Stage #1	08:05:02	0.13	13.71	24	CHECK FRICTION ACROSS JETS
Stage #2	08:13:49	0.00	191.08	3455	Start Sand
Event #2	09:16:37	3.00	0.00	3504	START TO CLEAN UP
Stage #3	09:21:32	3.00	54.01	3460	CIRCULATE HOLE CLEAN
Event #3	09:42:18	0.00	0.00	4	Pause
Event #4	09:53:13	0.18	0.00	1	Resume
Event #5	09:55:23	0.00	0.00	1	Pause
Event #6	10:42:02	0.00	0.00	6	Resume
Event #7	10:42:05	0.00	0.00	6	End Job

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.1
Job Type: NOTCHING JOB

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	08:05:02	09:13:49	00:08:47
2	08:13:49	09:21:32	01:07:43
3	09:21:32	10:42:05	01:20:33
Total	08:05:02	10:42:05	02:37:03

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Sl Volume (bbl)	Slurry Volume (bbl)
1	0.00	13.71
2	0.00	191.08
3	0.00	54.01
Tot/Avg	0.00	258.79

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	2201	1.59	1.49	0.00
2	3451	2.82	1.72	0.16
3	3250	2.71	1.53	0.09
Tot/Avg	3269	2.69	1.66	0.15

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	3884	2.35	2.38	0.00
2	4014	3.00	2.55	0.37
3	4782	6.08	1.73	0.20
Max Job	4782	6.08	2.55	0.37

*Average based on volume.

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.1
Job Type: NOTCHING JOB

DATA LISTING

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
08:04:56 Event #1 Start Job							
08:05:02 Stage #1 CHECK FRICTION ACROSS JETS							
08:05:42	24	0.34	0.00	0.00	0.12	0.14	0
08:06:42	183	0.52	0.00	0.00	0.67	0.69	2
08:07:42	920	0.94	0.69	0.00	1.22	1.24	21
08:08:42	2816	2.01	2.01	0.00	3.08	3.10	138
08:09:42	2863	2.01	2.04	0.00	5.10	5.12	141
08:10:42	2854	2.02	2.04	0.00	7.11	7.13	141
08:11:42	3848	2.32	2.37	0.00	9.30	9.32	219
08:12:42	3428	2.23	2.24	0.00	11.55	11.57	187
08:13:42	3466	0.00	2.25	0.00	13.71	13.73	0
==== Stage Total 13.71 (bbl) ====							
08:13:49 Stage #2 Start Sand							
08:14:37	3534	2.25	2.28	0.06	1.46	15.19	195
08:15:37	3497	2.25	2.25	0.04	3.71	17.44	193
08:16:37	3401	2.25	2.21	0.13	5.96	19.69	188
08:17:37	3357	2.25	2.20	0.13	8.21	21.94	185
08:18:37	3486	2.25	2.25	0.13	10.46	24.19	192
08:19:37	3568	2.70	2.19	0.15	12.98	26.70	236
08:20:37	3797	2.70	2.22	0.04	15.68	29.40	251
08:21:37	3459	2.70	2.09	0.17	18.38	32.10	229
08:22:37	3410	2.70	2.03	0.16	21.08	34.80	226
08:23:37	3591	2.80	2.16	0.06	23.82	37.54	246
08:24:37	3410	2.80	2.00	0.18	26.62	40.34	234
08:25:37	3421	2.80	1.99	0.10	29.42	43.14	235
08:26:37	3465	2.80	1.98	0.00	32.22	45.94	238
08:27:37	3331	2.80	2.03	0.06	35.02	48.74	229
08:28:37	3219	2.70	2.00	0.00	37.87	51.60	213
08:29:37	3602	2.70	2.11	0.10	40.57	54.30	238
08:30:37	3371	2.70	2.06	0.02	43.27	57.00	223
08:31:37	3469	2.70	2.06	0.09	45.97	59.70	230
08:32:37	3530	2.80	2.30	0.24	48.68	62.40	242
08:33:37	3561	2.80	2.35	0.11	51.48	65.20	244
08:34:37	3507	2.80	2.53	0.24	54.28	68.00	241
08:35:37	3535	2.80	1.52	0.24	57.06	70.80	243
08:36:37	3044	2.80	1.52	0.15	59.88	73.60	209
08:37:37	3542	2.80	1.52	0.04	62.68	76.40	243

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.1
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
08:38:37	3576	2.80	1.49	0.22	65.48	79.20	245
08:39:37	3531	2.80	1.52	0.14	68.28	82.00	242
08:40:37	3449	2.80	1.52	0.07	71.08	84.80	237
08:41:37	3508	2.80	1.52	0.07	73.88	87.60	241
08:42:37	3445	2.80	1.52	0.13	76.68	90.40	236
08:43:37	3510	2.80	1.49	0.16	79.48	93.20	241
08:44:37	3436	2.80	1.49	0.15	82.28	96.00	236
08:45:37	3427	2.80	1.49	0.21	85.08	98.80	235
08:46:37	3392	2.80	1.52	0.15	87.88	101.60	233
08:47:37	3480	2.90	1.52	0.10	90.75	104.48	247
08:48:37	3480	2.90	1.52	0.28	93.65	107.38	247
08:49:37	3480	2.90	1.50	0.18	96.55	110.28	247
08:50:37	3442	2.90	1.53	0.17	99.45	113.17	245
08:51:37	3496	2.90	1.53	0.23	102.35	116.07	248
08:52:37	3469	2.90	1.53	0.14	105.25	118.97	247
08:53:37	3447	2.90	1.53	0.30	108.15	121.87	245
08:54:37	3633	2.90	1.50	0.07	111.05	124.77	258
08:55:37	3458	2.90	1.53	0.29	113.95	127.67	246
08:56:37	3371	2.90	1.53	0.15	116.85	130.57	240
08:57:37	3406	2.90	1.53	0.22	119.75	133.47	242
08:58:37	3341	2.90	1.50	0.25	122.64	136.37	237
08:59:37	3411	2.90	1.53	0.13	125.54	139.27	242
09:00:37	3384	2.90	1.53	0.15	128.44	142.17	240
09:01:37	3458	2.90	1.53	0.23	131.34	145.07	246
09:02:37	3466	3.00	1.51	0.26	134.33	148.05	255
09:03:37	3455	3.00	1.53	0.10	137.33	151.05	254
09:04:37	3480	3.00	1.53	0.13	140.33	154.05	256
09:05:37	3427	3.00	1.53	0.27	143.33	157.06	252
09:06:37	3387	3.00	1.50	0.13	146.33	160.06	249
09:07:37	3431	3.00	1.53	0.20	149.33	163.06	252
09:08:37	3499	3.00	1.53	0.13	152.33	166.06	257
09:09:37	3384	3.00	1.53	0.18	155.33	169.06	249
09:10:37	3476	3.00	1.53	0.24	158.33	172.06	256
09:11:37	3493	3.00	1.53	0.15	161.33	175.06	257
09:12:37	3448	3.00	1.53	0.22	164.33	178.06	253
09:13:37	3433	3.00	1.53	0.17	167.33	181.06	252
09:14:37	3403	3.00	1.53	0.18	170.33	184.06	250
09:15:37	3449	3.00	1.50	0.20	173.33	187.06	254
09:16:37	3504	3.00	1.53	0.21	176.33	190.06	258
09:16:37 Event #2 START TO CLEAN UP							
09:17:32	3546	3.00	1.53	0.31	179.08	192.81	261
09:18:32	3543	3.00	1.53	0.13	182.08	195.81	260
09:19:32	3397	3.00	1.52	0.14	185.08	198.81	250
09:20:32	3444	3.00	1.50	0.00	188.08	201.81	253
09:21:32	3460	3.00	1.53	0.02	191.08	204.80	254

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.1
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
==== Stage Total 191.08 (bbl) ====							
09:21:32 Stage #3 CIRCULATE HOLE CLEAN							
09:22:27	3459	3.00	1.53	0.00	2.75	207.55	254
09:23:27	3451	2.74	1.53	0.00	5.74	210.55	232
09:24:27	3452	2.74	1.53	0.00	8.48	213.29	232
09:25:27	4534	3.09	1.53	0.00	11.32	216.12	344
09:26:27	4718	3.14	1.53	0.00	14.45	219.25	363
09:27:27	4746	3.14	1.53	0.00	17.58	222.39	366
09:28:27	4771	3.15	1.53	0.00	20.73	225.54	369
09:29:27	4754	3.15	1.53	0.00	23.88	228.69	367
09:30:27	4751	3.15	1.53	0.00	27.03	231.83	366
09:31:27	4751	3.14	1.50	0.00	30.17	234.98	365
09:32:27	4720	3.15	1.53	0.00	33.32	238.12	364
09:33:27	4725	3.14	1.53	0.00	36.46	241.26	364
09:34:27	3926	2.93	1.53	0.00	39.59	244.39	281
09:35:27	2939	2.57	1.50	0.00	42.20	247.01	185
09:36:27	2931	2.56	1.53	0.00	44.77	249.57	184
09:37:27	2926	2.57	1.53	0.00	47.34	252.14	184
09:38:27	2925	2.57	1.53	0.00	49.91	254.71	184
09:39:27	2937	2.58	1.53	0.00	52.48	257.28	185
09:40:27	4	0.05	1.53	0.00	53.47	258.27	0
09:41:27	4	0.00	1.53	0.00	53.62	258.42	0
09:42:18 Event #3 Pause							
09:53:13 Event #4 Resume							
09:54:07	1	0.00	-0.00	0.00	54.01	258.81	0
09:55:07	1	0.00	-0.00	0.00	54.01	258.81	0
09:55:23 Event #5 Pause							
10:42:02 Event #6 Resume							
==== Stage Total 54.01 (bbl) ====							

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.1
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP

10:42:05 Event #7 End Job

HALLIBURTON ENERGY SERVICES

ACQUIRE Version 2.11

CUSTOMER AND JOB INFORMATION

Customer	S.W.E.P.I.	Date	10-Feb-1996
Contractor	BECKMAN	County	MONTMORENCY
Lease	LOUD	Town	29N
Location	25954	Section	19
Formation	ANTRIM	Range	3E
Job Type	NOTCHING JOB	Permit No	49096
Country	U.S.A.	Well No	C1-19
State	MICHIGAN	Field Name	ALBERT LOUD

Customer Representative ALAN LOCKWOOD Halliburton Operator D.NELSON Ticket No. 872103.2

STAGE DESCRIPTIONS

PUMP AT CUSTOMER REQUEST

WELL CONFIGURATION INFORMATION

Packer Type NONE Depth 0 ft

Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1284	1284	4.950	5.500	1.995	2.375
2	1286	1286	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	1284	1285	2

REMARKS ABOUT JOB

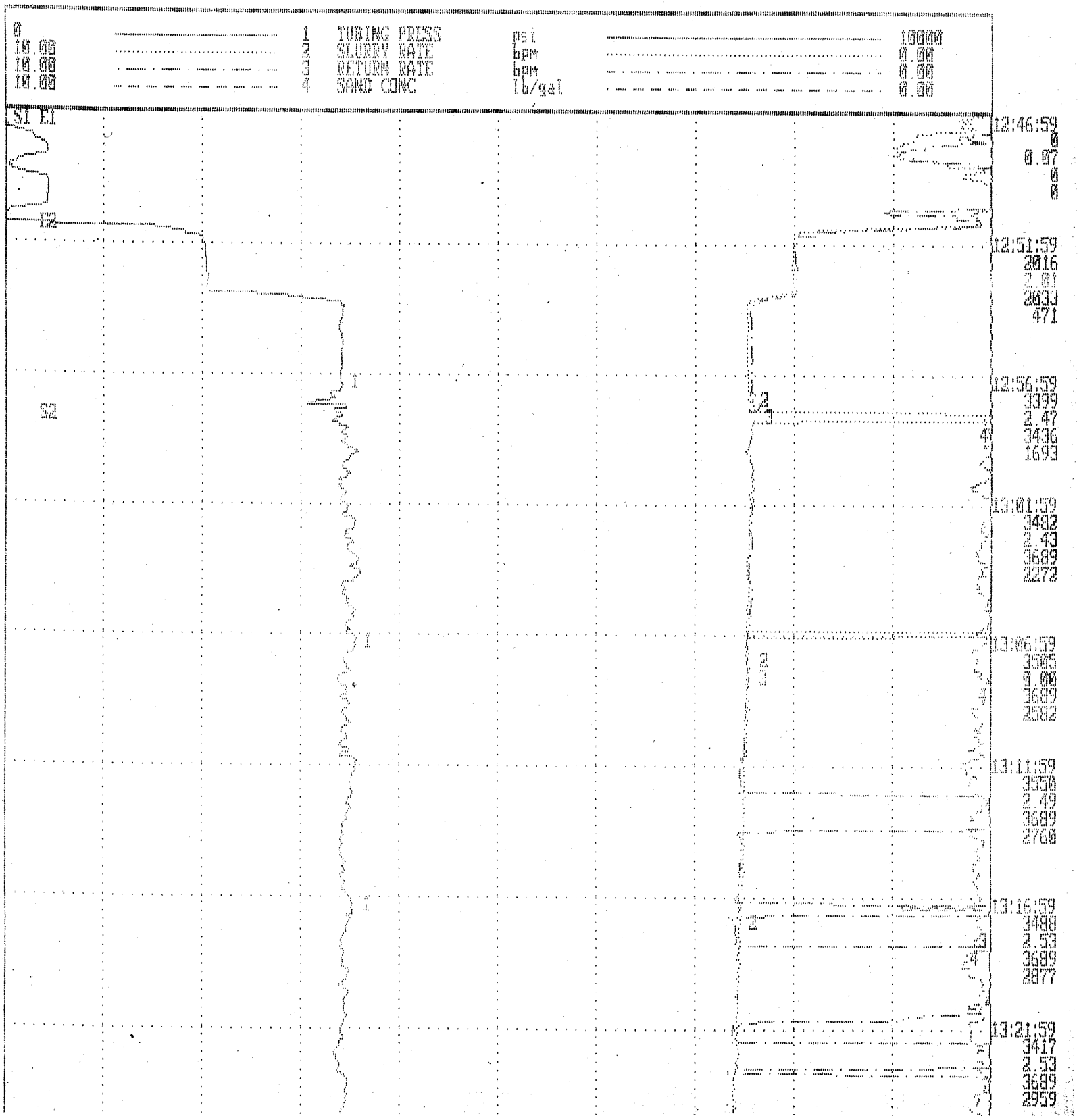
NOTCHING JOB

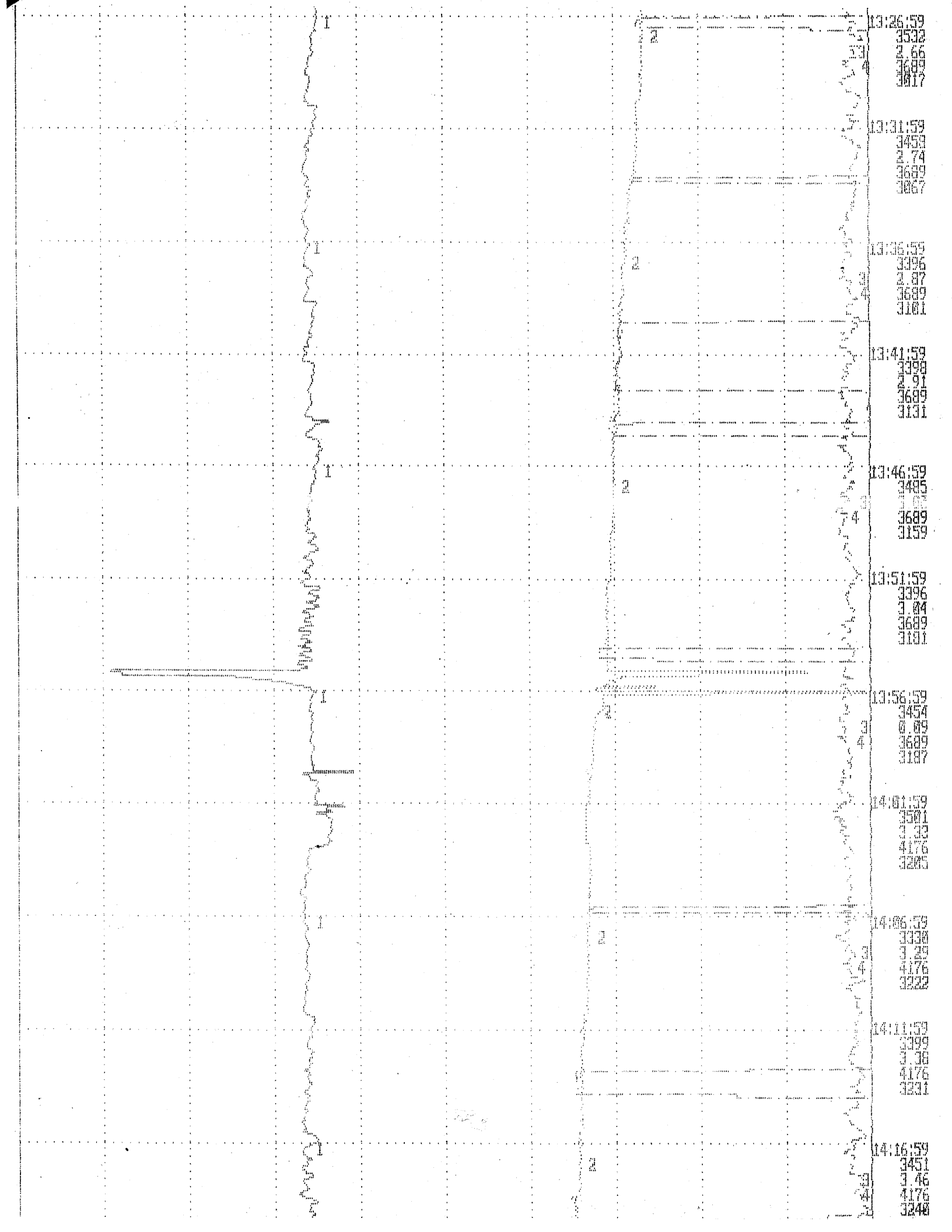
2-10-96

THANKS

REALTIME STRIP CHART

1. Tubing Press (psi)
2. Slurry Rate (bpm)
3. Tubing Press (psi) Max for Job
4. Tubing Press (psi) Avg for Job

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3159
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3689
3101
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3454
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3689
3197
14:01:59
3501
4176
3205
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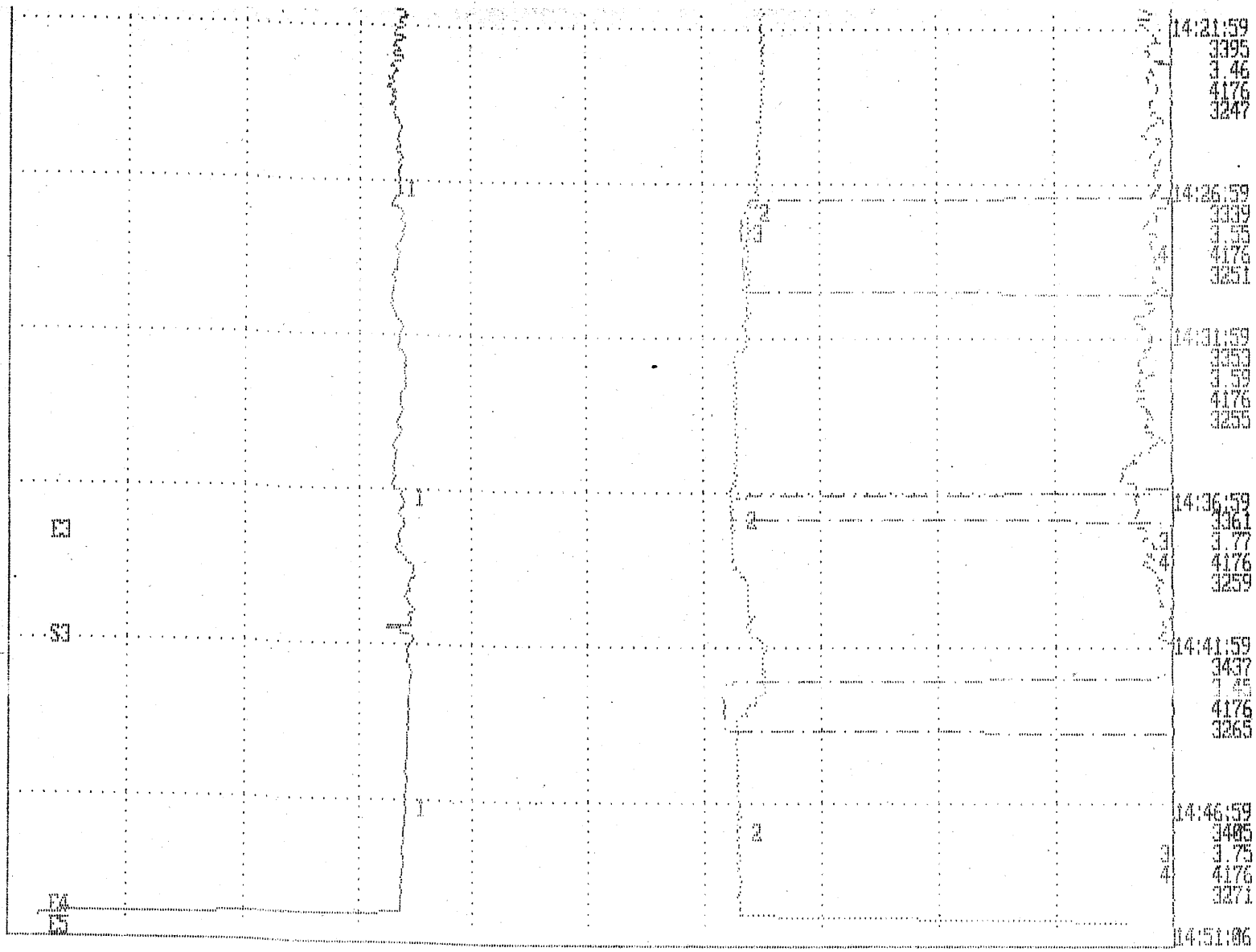
3399
4176
3231
14:16:59
3451
4176
3240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3.46
4176
3247
14:26:59
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3.55
4176
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14:31:59
3353
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4176
3255
14:36:59
3361
3.77
4176
3259
14:41:59
3437
4176
3265
14:46:59
3405
3.75
4176
3271
14:51:06

PAUSE


14:52:06

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.2
Job Type: NOTCHING JOB

JOB SUMMARY

JOB START TIME: 12:46:58
JOB END TIME: 14:52:06
JOB DURATION: 02:05:08

STAGES AND EVENTS:

Chart	Time	Slurry Rate (bpm)	Slurry Stage Volume (bbl)	Tubing Press. (psi)	Remark
Event #1	12:46:58	0.00	0.00	0	Start Job
Stage #1	12:47:08	0.35	17.67	6	LOAD AND TEST B.P.
Event #2	12:51:19	0.82	0.00	829	PUMP TO CHECK FRICTION PRESSURE
Stage #2	12:58:28	0.00	312.58	3363	Start Sand
Event #3	14:38:31	3.77	0.00	3346	CLEAN BLENDER TUB
Stage #3	14:41:52	3.50	32.41	3464	CIRCULATE HOLE CLEAN
Event #4	14:50:48	0.67	0.00	368	Stop Pumping
Event #5	14:51:05	0.00	0.00	18	Pause
Event #6	14:52:03	0.00	0.00	14	Resume
Event #7	14:52:06	0.00	0.00	14	End Job

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.2
Job Type: NOTCHING JOB

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	12:47:08	12:58:28	00:11:20
2	12:58:28	14:41:52	01:43:24
3	14:41:52	14:52:06	00:10:14
Total	12:47:08	14:52:06	02:04:58

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Sl Volume (bbl)	Slurry Volume (bbl)
1	0.00	17.67
2	0.00	312.58
3	0.00	32.41
Tot/Avg	0.00	362.66

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	1909	1.61	1.55	0.00
2	3413	3.03	2.34	0.20
3	3360	3.62	2.07	0.00
Tot/Avg	3272	2.94	2.13	0.19

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	3689	2.49	2.44	0.00
2	4176	3.77	3.78	4.55
3	3466	3.75	3.86	0.00
Max Job	4176	3.77	3.86	4.55

*Average based on volume.

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.2
Job Type: NOTCHING JOB

DATA LISTING

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
12:46:58 Event #1 Start Job							
12:47:08 Stage #1 LOAD AND TEST B.P.							
12:47:44	133	0.68	0.06	0.00	0.19	0.23	2
12:48:44	249	0.70	0.81	0.00	1.08	1.12	4
12:49:44	432	0.00	0.00	0.00	1.29	1.33	0
12:50:44	109	0.20	1.27	0.00	1.30	1.34	1
12:51:19 Event #2 PUMP TO CHECK FRICTION PRESSURE							
12:51:39	1965	1.99	1.93	0.00	2.01	2.05	96
12:52:39	2037	2.02	1.98	0.00	4.02	4.06	101
12:53:39	2051	2.02	1.98	0.00	6.04	6.08	101
12:54:39	3424	2.48	2.44	0.00	8.38	8.43	208
12:55:39	3420	2.48	2.44	0.00	10.86	10.90	208
12:56:39	3408	2.47	2.43	0.00	13.33	13.37	206
12:57:39	3331	2.44	2.41	0.00	15.80	15.84	199
==== Stage Total 17.67 (bbl) ====							
12:58:28 Stage #2 Start Sand							
12:58:34	3422	0.00	2.41	0.03	0.00	17.71	0
12:59:34	3407	2.45	2.45	0.06	1.99	19.70	205
13:00:34	3430	2.42	2.41	0.03	4.43	22.14	204
13:01:34	3451	2.45	2.42	0.08	6.86	24.57	207
13:02:34	3545	2.45	2.43	0.10	9.30	27.01	213
13:03:34	3458	2.45	2.42	0.10	11.75	29.46	208
13:04:34	3623	2.48	2.46	0.08	14.22	31.93	220
13:05:34	3473	2.46	2.43	0.04	16.68	34.39	209
13:06:34	3452	2.48	2.45	0.04	19.15	36.86	209
13:07:34	3497	2.49	2.47	0.18	21.09	38.80	213
13:08:34	3392	2.45	2.46	0.08	23.55	41.26	204
13:09:34	3491	2.45	2.49	0.06	26.03	43.74	209
13:10:34	3418	2.49	2.50	0.16	28.50	46.21	209
13:11:34	3387	2.49	2.50	0.10	30.98	48.69	207
13:12:34	3506	2.49	2.53	0.16	33.49	51.20	214
13:13:34	3518	2.53	0.00	0.10	35.99	53.70	218
13:14:34	3418	2.53	2.56	0.21	38.50	56.21	212
13:15:34	3441	2.53	2.54	0.13	41.00	58.71	214

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.2
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
13:16:34	3410	2.53	2.55	0.13	43.52	61.23	212
13:17:34	3497	2.56	0.00	0.03	46.05	63.77	221
13:18:34	3395	2.53	2.58	0.19	48.61	66.32	211
13:19:34	3396	2.53	0.00	0.30	51.16	68.87	211
13:20:34	3489	2.53	0.00	0.11	53.72	71.43	217
13:21:34	3430	2.58	0.97	0.09	56.29	74.00	216
13:22:34	3401	2.58	0.00	0.09	58.86	76.57	215
13:23:34	3368	2.62	2.66	0.10	61.43	79.14	216
13:24:34	3459	2.62	0.00	0.12	64.04	81.75	222
13:25:34	3423	2.62	0.00	0.13	66.64	84.35	220
13:26:34	3531	2.66	0.00	0.31	69.27	86.96	230
13:27:34	3535	2.66	0.08	0.26	71.93	89.64	230
13:28:34	3486	2.66	0.00	0.18	74.60	92.31	227
13:29:34	3398	2.66	0.00	0.17	77.27	94.98	221
13:30:34	3397	2.66	0.00	0.11	79.94	97.65	221
13:31:34	3505	2.74	0.00	0.20	82.66	100.37	236
13:32:34	3432	2.74	0.00	0.16	85.39	103.10	231
13:33:34	3374	2.79	0.00	0.20	88.13	105.84	230
13:34:34	3428	2.83	0.00	0.15	90.90	108.61	238
13:35:34	3400	2.87	0.00	0.23	93.72	111.43	239
13:36:34	3433	2.87	0.00	0.26	96.55	114.26	242
13:37:34	3385	2.83	0.00	0.22	99.41	117.12	235
13:38:34	3430	2.87	0.00	0.34	102.29	120.00	241
13:39:34	3404	2.91	0.00	0.20	105.18	122.89	243
13:40:34	3451	2.96	2.84	0.20	108.10	125.81	250
13:41:34	3401	2.96	2.94	0.32	111.02	128.73	246
13:42:34	3487	2.91	2.98	0.27	113.95	131.66	249
13:43:34	3418	2.96	2.98	0.37	116.91	134.62	248
13:44:34	3387	2.91	0.00	0.22	119.86	137.57	242
13:45:34	3382	3.00	2.95	0.31	122.84	140.55	248
13:46:34	3499	3.04	0.00	0.21	125.85	143.56	261
13:47:34	3493	2.96	0.00	0.20	128.86	146.57	253
13:48:34	3458	3.00	0.00	0.32	131.87	149.58	254
13:49:34	3393	3.04	0.00	0.33	134.89	152.59	253
13:50:34	3518	3.04	0.00	0.32	137.92	155.63	262
13:51:34	3367	3.04	0.00	0.17	140.96	158.67	251
13:52:34	3412	3.08	0.00	0.32	144.03	161.74	258
13:53:34	3454	3.08	0.00	0.20	147.12	164.83	261
13:54:34	3317	3.08	0.00	0.34	150.20	167.91	251
13:55:34	3447	3.08	0.00	0.25	153.29	171.00	260
13:56:34	3068	3.08	0.00	0.27	156.04	173.75	232
13:57:34	3471	3.17	0.00	0.28	158.53	176.24	269
13:58:34	3379	3.25	0.00	0.32	161.73	179.44	269
13:59:34	3470	3.29	0.00	0.26	164.98	182.69	280
14:00:34	3454	3.64	0.00	0.33	168.26	185.97	308
14:01:34	3459	3.29	0.00	0.24	171.55	189.26	279
14:02:34	3596	3.38	0.00	0.40	174.89	192.60	297
14:03:34	3633	3.33	0.00	0.30	178.23	195.94	297
14:04:34	3414	3.29	0.00	0.30	181.53	199.24	275
14:05:34	3386	3.29	0.00	0.24	184.83	202.54	273

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.2
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
14:06:34	3346	3.29	3.07	0.26	188.13	205.84	270
14:07:34	3386	3.33	0.00	0.28	191.45	209.16	276
14:08:34	3369	3.33	0.00	0.21	194.78	212.49	275
14:09:34	3407	3.33	0.00	0.22	198.10	215.81	278
14:10:34	3328	3.33	0.00	0.17	201.44	219.15	272
14:11:34	3457	3.38	0.00	0.15	204.79	222.50	286
14:12:34	3379	3.38	0.00	0.16	208.17	225.88	279
14:13:34	3381	3.42	0.00	0.21	211.58	229.29	283
14:14:34	3388	3.38	3.46	0.19	214.98	232.69	280
14:15:34	3367	3.38	0.00	0.35	218.38	236.09	279
14:16:34	3404	3.46	0.00	0.07	221.79	239.50	289
14:17:34	3399	3.42	0.00	0.19	225.22	242.93	285
14:18:34	3345	3.42	0.00	0.13	228.66	246.37	280
14:19:34	3468	3.51	0.00	0.12	232.10	249.81	298
14:20:34	3339	3.46	0.00	0.14	235.59	253.30	283
14:21:34	3399	3.46	0.00	0.15	239.07	256.78	288
14:22:34	3267	3.46	0.00	0.22	242.55	260.26	277
14:23:34	3280	3.46	0.00	0.18	246.03	263.74	278
14:24:34	3253	3.55	0.00	0.11	249.52	267.23	283
14:25:34	3320	3.55	0.00	0.10	253.03	270.74	289
14:26:34	3367	3.51	0.00	0.15	256.55	274.26	289
14:27:34	3289	3.55	3.60	0.02	260.08	277.79	286
14:28:34	3379	3.59	3.67	0.15	263.68	281.39	297
14:29:34	3323	3.64	3.66	0.13	267.29	285.00	296
14:30:34	3281	3.59	0.00	0.23	270.90	288.61	289
14:31:34	3359	3.68	0.00	0.26	274.52	292.23	303
14:32:34	3386	3.77	0.00	0.24	278.16	295.87	313
14:33:34	3403	3.72	0.00	0.32	281.89	299.60	310
14:34:34	3360	3.72	0.00	0.18	285.61	303.32	307
14:35:34	3291	3.72	0.00	0.20	289.32	307.03	300
14:36:34	3321	3.72	0.00	0.44	293.04	310.75	303
14:37:34	3382	3.77	3.77	0.30	296.79	314.50	312
14:38:31 Event #3 CLEAN BLENDER TUB							
14:38:34	3320	3.77	0.00	0.25	300.55	318.26	307
14:39:29	3478	3.72	0.00	0.17	303.98	321.69	317
14:40:29	3396	3.59	0.00	0.12	307.62	325.33	299
14:41:29	3310	3.59	0.00	0.10	311.28	328.94	291
==== Stage Total 312.58 (bbl) ====							
14:41:52 Stage #3 CIRCULATE HOLE CLEAN							
14:42:24	3416	3.50	0.00	0.00	1.86	332.15	293
14:43:24	3409	3.50	3.86	0.00	5.35	335.64	292
14:44:24	3416	3.70	3.82	0.00	8.96	339.26	310

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.2
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
14:45:24	3394	3.70	0.00	0.00	12.69	342.98	308
14:46:24	3400	3.75	0.00	0.00	16.40	346.69	312
14:47:24	3402	3.70	0.00	0.00	20.11	350.40	308
14:48:24	3376	3.75	0.00	0.00	23.82	354.11	310
14:49:24	3368	3.65	0.00	0.00	27.53	357.82	301
14:50:24	3355	3.70	0.00	0.00	31.23	361.52	304

14:50:48 Event #4 Stop Pumping

14:51:05 Event #5 Pause

14:52:03 Event #6 Resume

==== Stage Total 32.41 (bbl) ====

14:52:06 Event #7 End Job

HALLIBURTON ENERGY SERVICES

ACQUIRE Version 2.11

CUSTOMER AND JOB INFORMATION

Customer	S.W.E.P.I.	Date	10-Feb-1996
Contractor	BECKMAN	County	MONTMORENCY
Lease	LOUD	Town	29N
Location	25954	Section	19
Formation	ANTRIM	Range	3E
Job Type	NOTCHING JOB	Permit No	49096
Country	U.S.A.	Well No	C1-19
State	MICHIGAN	Field Name	ALBERT LOUD

Customer Representative ALAN LOCKWOOD Halliburton Operator D.NELSON Ticket No. 872103.3

STAGE DESCRIPTIONS

PUMP AT CUSTOMER REQUEST

WELL CONFIGURATION INFORMATION

Packer Type NONE Depth 0 ft

Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1260	1260	4.950	5.500	1.995	2.375
2	1261	1261	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	1260	1261	2

REMARKS ABOUT JOB

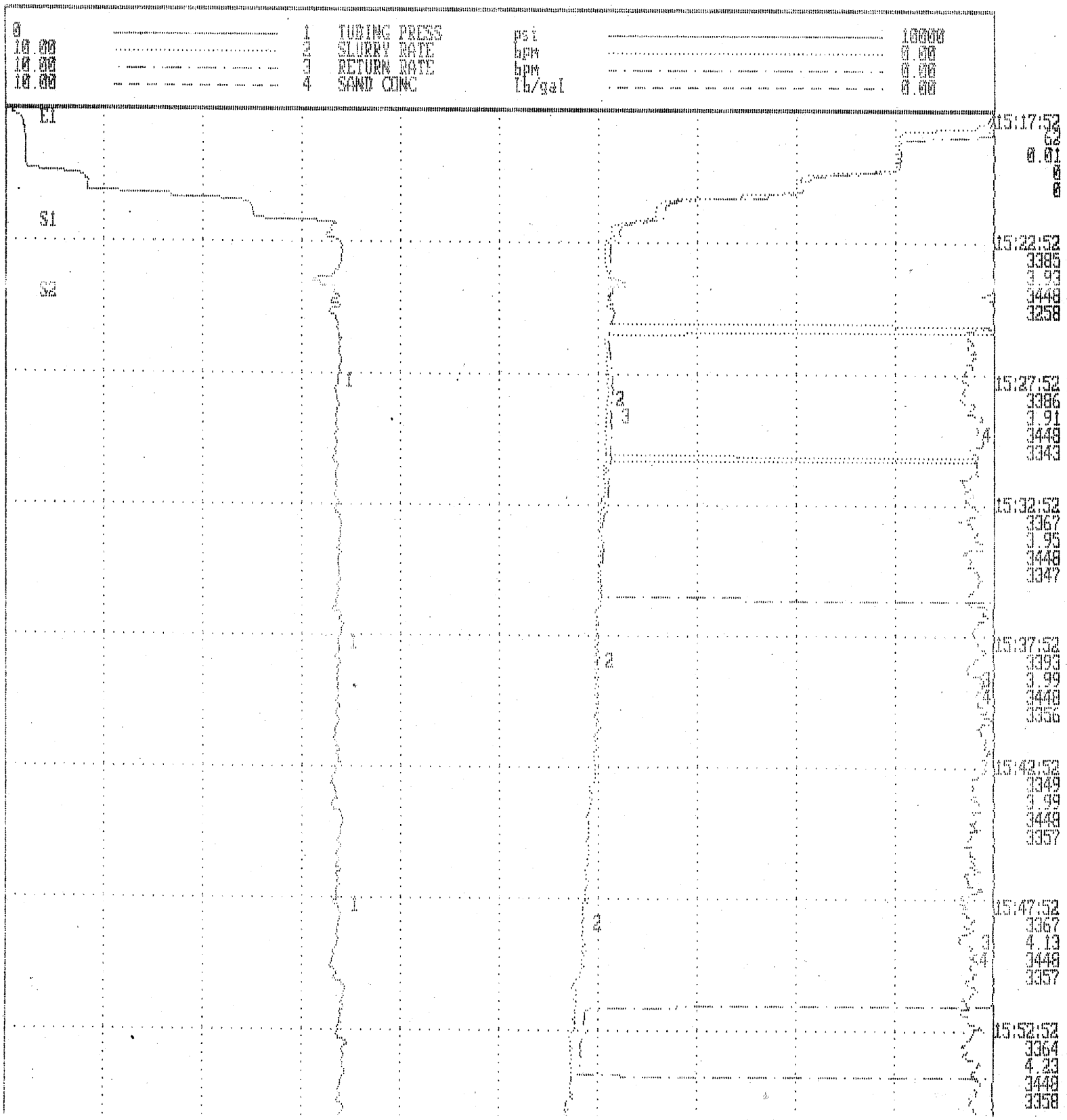
NOTCHING JOB

2-10-96

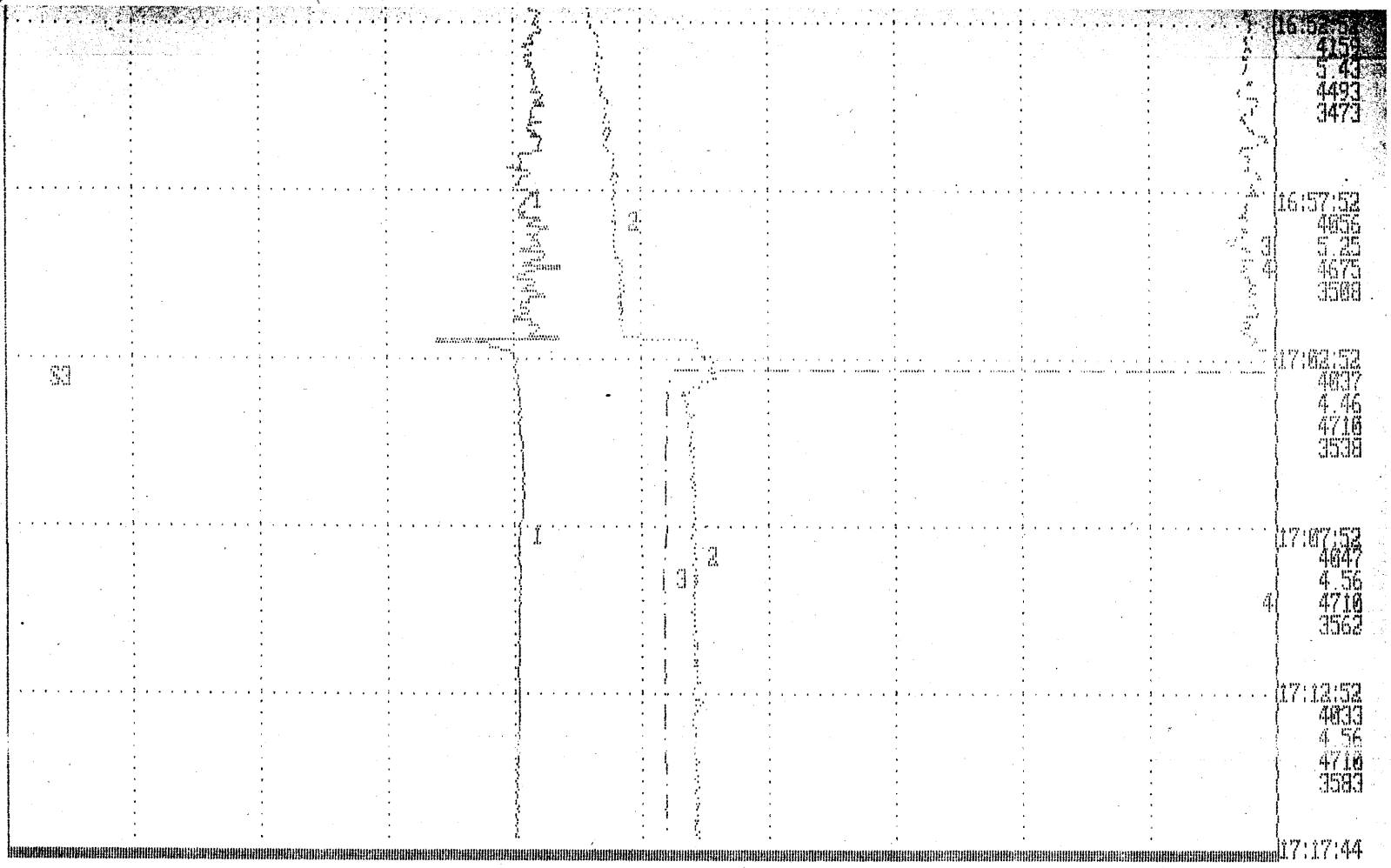
THANKS

REALTIME STRIP CHART

1. Tubing Press (psi)
2. Slurry Rate (bpm)
3. Tubing Press (psi) Max for Job
4. Tubing Press (psi) Avg for Job



15:57:52
3449
4.37
3511
3366
16:02:52
3421
4.42
3533
3379
16:07:52
3429
4.51
3533
3387
16:12:52
3468
4.56
3533
3396
16:17:52
3317
3533
3395
16:22:52
3454
2.82
4493
3398
16:27:52
3471
5.19
4493
3403
16:32:52
3408
5.26
4493
3407
16:37:52
3447
5.25
4493
3410
16:42:52
3545
5.28
4493
3415
16:47:52
4133
5.53
4493
3433


16:52:52
4159
5.41
4493
3473
16:57:52
4056
5.25
4675
3508
17:02:52
4037
4.46
4710
3538
17:07:52
4047
4.56
4710
3562
17:12:52
4033
4.56
4710
3583
17:17:44

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.3
Job Type: NOTCHING JOB

JOB SUMMARY

JOB START TIME: 15:17:51
JOB END TIME: 17:17:44
JOB DURATION: 01:59:53

STAGES AND EVENTS:

Chart		Time	Slurry Rate (bpm)	Slurry Stage Volume (bbl)	Tubing Press. (psi)	Remark
Event	#1	15:17:51	0.00	0.00	0	Start Job
Stage	#1	15:21:59	3.49	10.74	2606	PUMP TO GET FRICTION PSI
Stage	#2	15:24:45	3.87	447.36	3324	Start Sand
Stage	#3	17:02:56	4.46	65.47	4036	CIRCULATE HOLE CLEAN
Event	#2	17:17:17	0.49	0.00	402	Stop Pumping
Event	#3	17:17:44	0.00	0.00	13	End Job

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.3
Job Type: NOTCHING JOB

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	15:21:59	15:24:45	00:02:46
2	15:24:45	17:02:56	01:38:11
3	17:02:56	17:17:44	00:14:48
Total	15:21:59	17:17:44	01:55:45

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Sl Volume (bbl)	Slurry Volume (bbl)
1	0.00	10.74
2	0.00	447.36
3	0.00	65.47
Tot/Avg	0.00	523.57

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	3316	3.88	3.82	0.00
2	3544	4.57	3.86	0.21
3	4019	4.56	4.73	0.00
Tot/Avg	3598	4.55	3.97	0.20

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)	Return Rate (bpm)	Prop Conc Slurry* (lb/gal)
1	3448	3.94	3.89	0.00
2	4710	5.67	4.95	0.48
3	4086	4.71	4.83	0.00
Max Job	4710	5.67	4.95	0.48

*Average based on volume.

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.3
Job Type: NOTCHING JOB

DATA LISTING

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
15:17:51 Event #1 Start Job							
15:18:42	192	0.96	0.02	0.00	0.00	0.20	5
15:19:42	204	0.98	0.95	0.00	0.00	1.17	5
15:20:42	832	1.98	1.95	0.00	0.00	2.64	40
15:21:42	2509	3.42	3.33	0.00	0.00	5.46	210
15:21:59 Stage #1 PUMP TO GET FRICTION PSI							
15:22:37	3226	3.84	3.77	0.00	2.41	8.84	304
15:23:37	3394	3.93	3.88	0.00	6.33	12.77	327
15:24:37	3360	3.90	3.86	0.00	10.22	16.65	321
==== Stage Total 10.74 (bbl) ====							
15:24:45 Stage #2 Start Sand							
15:25:32	3288	3.83	3.84	0.00	3.04	20.21	309
15:26:32	3410	3.93	3.90	0.21	5.65	22.82	329
15:27:32	3386	3.91	3.87	0.22	9.57	26.74	324
15:28:32	3347	3.89	3.86	0.31	13.47	30.64	319
15:29:32	3358	3.92	3.87	0.09	17.39	34.56	323
15:30:32	3333	3.92	3.87	0.10	21.31	38.48	321
15:31:32	3353	3.95	3.90	0.19	24.56	41.73	324
15:32:32	3335	3.95	3.90	0.33	28.50	45.67	322
15:33:32	3397	3.95	3.96	0.25	32.47	49.64	328
15:34:32	3350	3.95	3.94	0.23	36.45	53.62	324
15:35:32	3364	3.95	3.96	0.16	40.42	57.60	325
15:36:32	3332	3.95	0.08	0.27	44.41	61.58	322
15:37:32	3415	4.04	0.00	0.19	48.42	65.59	338
15:38:32	3368	3.99	0.00	0.12	52.43	69.60	330
15:39:32	3355	4.04	0.00	0.14	56.45	73.62	332
15:40:32	3379	3.99	0.00	0.10	60.47	77.64	331
15:41:32	3347	3.99	0.00	0.14	64.49	81.66	327
15:42:32	3362	4.04	0.00	0.12	68.51	85.68	333
15:43:32	3289	4.09	0.00	0.18	72.55	89.72	329
15:44:32	3373	4.09	0.00	0.21	76.63	93.80	338
15:45:32	3381	4.13	0.00	0.26	80.73	97.90	342
15:46:32	3364	4.09	0.00	0.23	84.84	102.01	337
15:47:32	3344	4.13	0.00	0.14	88.95	106.13	339
15:48:32	3386	4.18	0.00	0.17	93.10	110.27	347
15:49:32	3353	4.13	0.00	0.32	97.24	114.42	340
15:50:32	3299	4.18	0.00	0.23	101.39	118.57	338

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.3
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
15:51:32	3419	4.23	0.00	0.22	105.61	122.78	354
15:52:32	3386	4.23	4.14	0.24	109.85	127.02	351
15:53:32	3410	4.27	4.17	0.28	114.11	131.28	357
15:54:32	3437	4.27	4.20	0.16	118.36	135.55	360
15:55:32	3352	4.32	0.00	0.24	122.65	139.82	355
15:56:32	3399	4.32	0.00	0.33	126.96	144.13	360
15:57:32	3511	4.37	0.00	0.33	131.31	148.48	376
15:58:32	3482	4.42	0.00	0.22	135.69	152.87	377
15:59:32	3448	4.42	4.27	0.32	140.11	157.28	373
16:00:32	3516	4.46	0.00	0.38	144.54	161.71	384
16:01:32	3519	4.46	0.00	0.21	148.99	166.16	385
16:02:32	3440	4.42	0.00	0.20	153.42	170.59	372
16:03:32	3460	4.46	0.00	0.10	157.85	175.02	378
16:04:32	3482	4.42	0.00	0.17	162.29	179.46	377
16:05:32	3431	4.46	0.00	0.27	166.73	183.90	375
16:06:32	3442	4.51	0.00	0.20	171.21	188.38	380
16:07:32	3444	4.51	0.00	0.21	175.69	192.86	381
16:08:32	3406	4.51	0.00	0.26	180.18	197.35	376
16:09:32	3489	4.56	0.00	0.19	184.72	201.89	389
16:10:32	3498	4.51	0.00	0.13	189.26	206.43	387
16:11:32	3477	4.56	0.00	0.25	193.81	210.98	388
16:12:32	3471	4.51	0.00	0.23	198.34	215.51	383
16:13:32	3416	4.51	0.18	0.02	202.88	220.05	377
16:14:32	3372	4.51	4.41	0.23	207.41	224.59	373
16:15:32	3368	4.51	4.43	0.25	211.95	229.12	372
16:16:32	3359	4.51	4.43	0.29	216.49	233.66	371
16:17:32	3363	4.51	4.44	0.32	221.01	238.18	372
16:18:32	3329	4.51	4.43	0.22	225.54	242.71	368
16:19:32	3294	4.56	0.00	0.20	230.06	247.23	368
16:20:32	3247	4.51	0.00	0.23	234.56	251.74	359
16:21:32	3322	2.82	0.00	0.29	237.98	255.05	329
16:22:32	3404	2.82	0.00	0.20	240.68	257.85	235
16:23:32	3495	3.11	0.00	0.31	243.70	260.87	267
16:24:32	3490	4.80	0.00	0.18	247.51	264.68	410
16:25:32	3489	4.80	0.00	0.15	252.31	269.48	410
16:26:32	3459	5.02	4.59	0.27	256.36	273.53	426
16:27:32	3452	5.05	4.62	0.20	261.37	278.54	427
16:28:32	3445	5.20	0.00	0.14	266.53	283.71	439
16:29:32	3511	5.16	0.00	0.16	271.71	288.88	443
16:30:32	3479	5.16	0.00	0.23	276.89	294.06	439
16:31:32	3398	5.16	0.00	0.15	282.07	299.24	429
16:32:32	3444	5.20	0.00	0.11	287.27	304.44	439
16:33:32	3435	5.25	0.00	0.25	292.48	309.65	442
16:34:32	3450	5.16	0.00	0.20	297.69	314.86	436
16:35:32	3456	5.20	0.00	0.14	302.91	320.08	440
16:36:32	3490	5.29	0.00	0.26	308.15	325.32	453
16:37:32	3495	5.25	4.77	0.12	313.39	330.57	449
16:38:32	3488	5.20	4.99	0.23	318.63	335.80	445
16:39:32	3508	5.20	4.91	0.26	323.86	341.03	447
16:40:32	3484	5.20	4.91	0.23	329.09	346.26	444

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.3
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP
16:41:32	3516	5.20	4.92	0.15	334.31	351.49	448
16:42:32	3480	5.20	4.91	0.26	339.55	356.72	444
16:43:32	3521	5.20	4.91	0.22	344.76	361.93	449
16:44:32	3479	5.20	4.88	0.19	349.98	367.15	443
16:45:32	3510	5.20	0.00	0.17	355.18	372.35	447
16:46:32	4178	5.53	0.00	0.20	360.57	377.74	566
16:47:32	4177	5.57	0.00	0.18	366.09	383.26	570
16:48:32	4102	5.48	0.00	0.23	371.59	388.76	551
16:49:32	4136	5.48	0.00	0.19	377.05	394.22	555
16:50:32	4181	5.43	0.00	0.22	382.51	399.68	557
16:51:32	4451	5.43	0.00	0.26	387.96	405.13	593
16:52:32	4181	5.39	0.00	0.20	393.37	410.54	552
16:53:32	4111	5.29	0.00	0.22	398.74	415.91	533
16:54:32	4187	5.34	0.00	0.17	404.07	421.24	548
16:55:32	4136	5.25	0.00	0.21	409.36	426.53	532
16:56:32	4201	5.25	0.00	0.21	414.62	431.79	540
16:57:32	4031	5.25	0.00	0.19	419.84	437.01	518
16:58:32	4120	5.25	0.00	0.31	425.04	442.22	530
16:59:32	4220	5.16	0.00	0.32	430.25	447.42	533
17:00:32	4191	5.20	0.00	0.17	435.42	452.59	534
17:01:32	4116	5.16	0.00	0.15	440.57	457.75	520
17:02:32	3842	4.50	0.00	0.07	445.56	462.74	424

==== Stage Total 447.36 (bbl) ====

17:02:56 Stage #3 CIRCULATE HOLE CLEAN

17:03:27	4034	4.37	4.77	0.00	2.29	466.82	431
17:04:27	4036	4.61	4.80	0.00	6.91	471.44	456
17:05:27	4073	4.61	4.81	0.00	11.52	476.06	460
17:06:27	4069	4.61	4.81	0.00	16.12	480.65	460
17:07:27	4065	4.61	4.81	0.00	20.70	485.24	460
17:08:27	4035	4.56	4.62	0.00	25.29	489.82	451
17:09:27	4043	4.56	4.83	0.00	29.88	494.41	452
17:10:27	4029	4.61	4.82	0.00	34.47	499.00	455
17:11:27	4035	4.61	4.82	0.00	39.05	503.59	456
17:12:27	4029	4.56	4.82	0.00	43.62	508.16	451
17:13:27	4026	4.52	4.82	0.00	48.19	512.73	445
17:14:27	4008	4.56	4.81	0.00	52.78	517.31	448
17:15:27	4018	4.52	4.81	0.00	57.35	521.88	445
17:16:27	4003	4.56	4.82	0.00	61.92	526.45	448

17:17:17 Event #2 Stop Pumping

17:17:22	172	0.20	1.48	0.00	65.47	530.00	1

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.3
Job Type: NOTCHING JOB

TIME	Tubing Pr (psi)	Slurry Rt (bpm)	Return Rt (bpm)	Sand Conc (lb/gal)	Stage Vol (bbl)	Job Volume (bbl)	HHP

==== Stage Total 65.47 (bbl) ====

17:17:44 Event #3 End Job

HALLIBURTON ENERGY SERVICES

ACQUIRE Version 2.11

CUSTOMER AND JOB INFORMATION

Customer	S.W.E.P.I.	Date	10-Feb-1996
Contractor	BECKMAN	County	MONTMORENCY
Lease	LOUD	Town	29N
Location	25954	Section	19
Formation	ANTRIM	Range	3E
Job Type	WATER FRAC	Permit No	49096
Country	U.S.A.	Well No	01-19
State	MICHIGAN	Field Name	ALBERT LOUD

Customer Representative ALAN LOCKWOOD

Halliburton Operator D.NELSON

Ticket No. 872103.4

STAGE DESCRIPTIONS

PUMP AT CUSTOMER REQUEST

WELL CONFIGURATION INFORMATION

Packer Type NONE Depth 0 ft

Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1160	1160	4.950	5.500	1.995	2.375
2	1261	1261	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	1260	1261	2

REMARKS ABOUT JOB

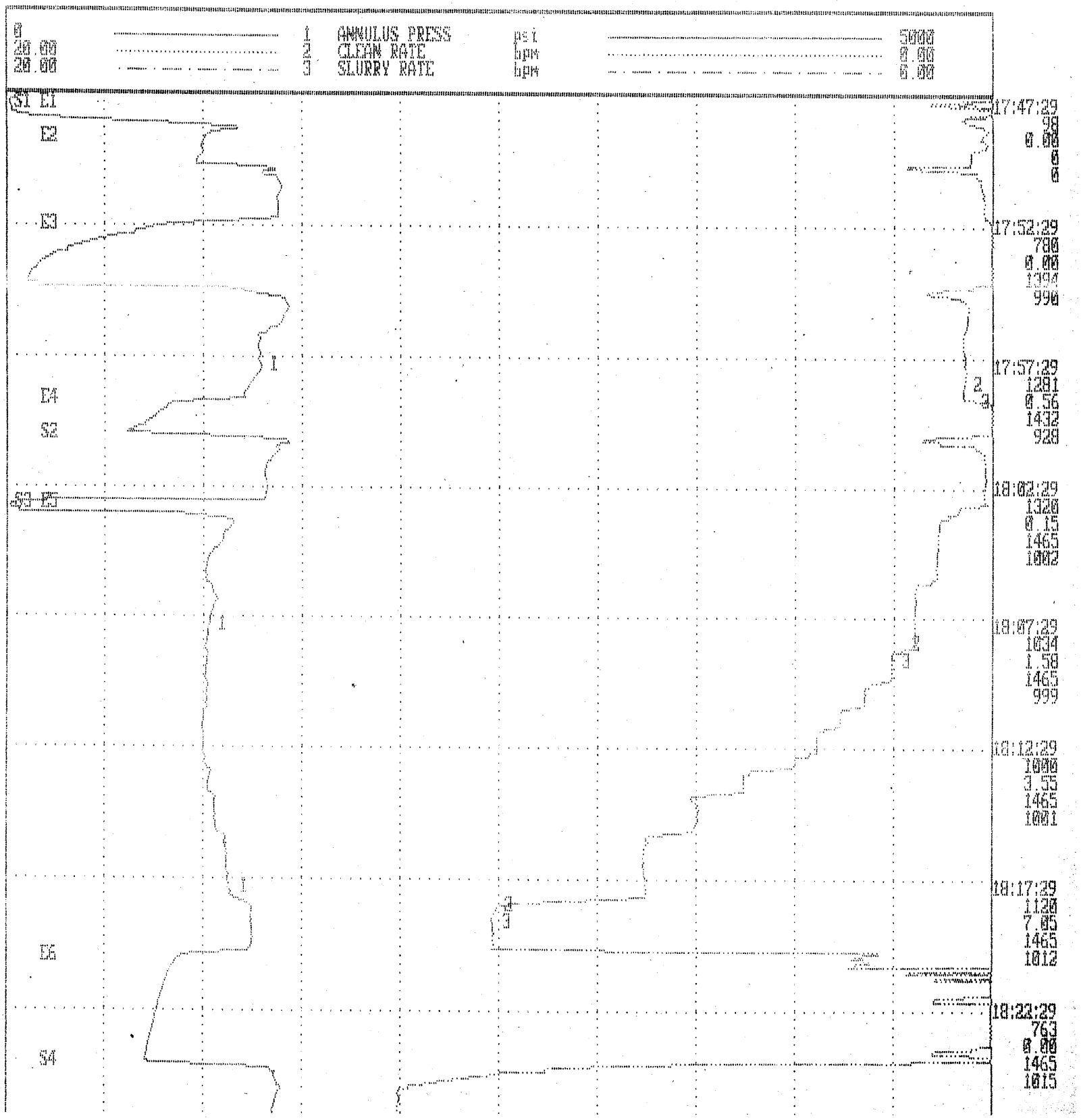
FRAC JOB

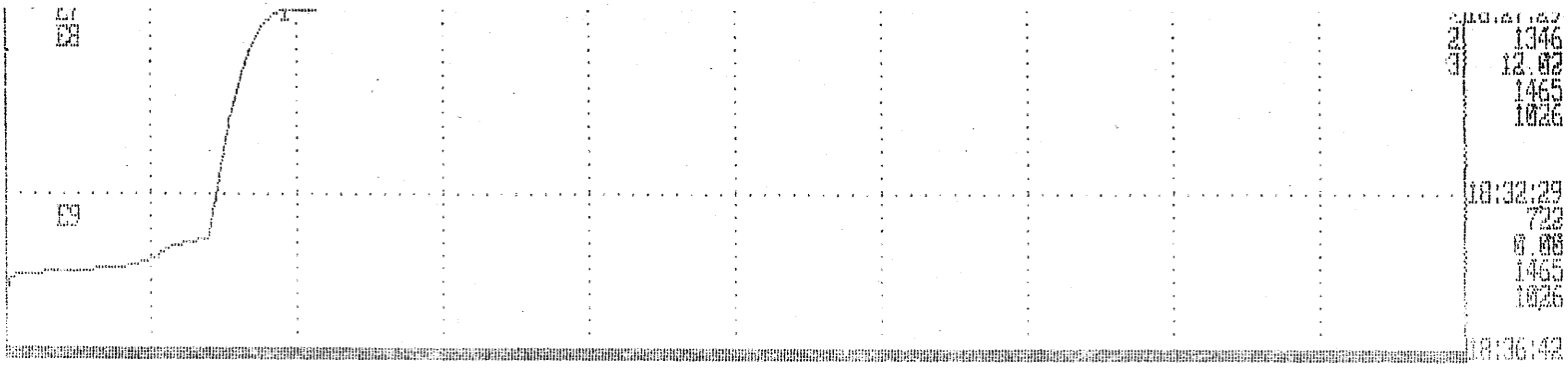
2-10-96

THANKS

REALTIME STRIP CHART

1. Annulus Press (psi)
2. Clean Rate (bpm)
3. Annulus Press (psi) Max for Job
4. Annulus Press (psi) Avg for Job




1346
12.02
1465
1026
10:32:29
722
0.00
1465
1026
10:36:42

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

JOB SUMMARY

JOB START TIME: 17:47:28
JOB END TIME: 18:36:42
JOB DURATION: 00:49:14

STAGES AND EVENTS:

Chart	Time	Clean Rate (bpm)	Clean Stage Volume (bbl)	Annulus Press. (psi)	Remark
Event #1	17:47:28	0.00	0.00	0	Start Job
Stage #1	17:47:34	0.16	4.36	73	LOAD AND BREAK FORMATION
Event #2	17:48:46	0.10	0.00	1197	Break Formation Annulus Pres s 1197 (psi) Clean Rate 1.33 (b pm)
Event #3	17:52:27	0.00	0.00	810	ISIP Annulus Press 810 (psi)
Event #4	17:59:18	0.00	0.00	830	ISIP Annulus Press 830 (psi)
Stage #2	18:00:20	0.00	0.91	633	PUMP
Event #5	18:02:56	0.18	0.00	1315	SURGE OFF
Stage #3	18:03:18	0.63	73.96	27	PUMP
Event #6	18:20:35	2.47	0.00	862	ISIP Annulus Press 862 (psi)
Stage #4	18:24:26	0.00	35.80	702	PUMP
Event #7	18:27:48	0.15	0.00	941	ISIP Annulus Press 941 (psi)
Event #8	18:28:10	0.00	0.00	877	Stop Pumping
Event #9	18:33:13	0.00	0.00	705	5 Min Shutin Pres. Annulus P ress 705 (psi)
Event #10	18:36:42	0.00	0.00	3	End Job

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	17:47:34	18:00:20	00:12:46
2	18:00:20	18:03:18	00:02:58
3	18:03:18	18:24:26	00:21:08
4	18:24:26	18:36:42	00:12:16
Total	17:47:34	18:36:42	00:49:08

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Cl Volume (bbl)	Clean Volume (bbl)
1	0.00	4.36
2	0.00	0.91
3	0.00	73.96
4	0.00	35.80
Tot/Avg	0.00	115.02

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Annulus Pressure (psi)	Clean Rate (bpm)	Slurry Rate (bpm)
1	955	0.44	0.44
2	1157	0.31	0.31
3	1006	4.06	4.06
4	1275	10.04	10.04
Tot/Avg	1026	3.05	3.05

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Annulus Pressure (psi)	Clean Rate (bpm)	Slurry Rate (bpm)
1	1432	1.85	1.85
2	1465	1.50	1.50
3	1250	10.16	10.16
4	1396	12.08	12.08
Max Job	1465	12.08	12.08

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

DATA LISTING

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
17:47:28 Event #1 Start Job							
17:47:34 Stage #1 LOAD AND BREAK FORMATION							
17:47:53	24	0.19	0.00	0.25	0.25	725	0
17:48:23	318	0.54	0.54	0.41	0.42	863	4
17:48:46 Event #2 Break Formation Annulus Press 1197 (psi) Clean Rate 1.33 (bpm)							
17:48:51	1099	0.12	0.12	0.52	0.53	1687	3
17:49:21	992	0.12	0.12	0.61	0.61	1580	3
17:49:51	978	0.44	0.44	0.78	0.78	1548	11
17:50:21	1368	0.77	0.77	1.26	1.26	1929	26
17:50:51	1389	0.25	0.25	1.40	1.41	1969	8
17:51:21	1374	0.19	0.19	1.51	1.51	1958	6
17:51:51	1381	0.18	0.18	1.60	1.60	1965	6
17:52:21	986	0.00	0.00	1.65	1.66	1614	0
17:52:27 Event #3 ISIP Annulus Press 810 (psi)							
17:52:49	589	0.00	0.00	1.65	1.66	1218	0
17:53:19	331	0.00	0.00	1.65	1.66	960	0
17:53:49	190	0.00	0.00	1.65	1.66	818	0
17:54:19	121	0.00	0.00	1.65	1.66	750	0
17:54:49	1098	0.92	0.92	1.76	1.76	1657	25
17:55:19	1423	0.53	0.53	2.23	2.23	1994	19
17:55:49	1411	0.52	0.52	2.48	2.48	1983	18
17:56:19	1355	0.54	0.54	2.74	2.74	1927	18
17:56:49	1290	0.59	0.59	3.03	3.03	1862	19
17:57:19	1288	0.57	0.57	3.33	3.33	1860	18
17:57:49	1294	0.53	0.53	3.61	3.61	1869	17
17:58:19	1256	0.56	0.56	3.88	3.88	1831	17
17:58:49	1215	0.60	0.60	4.17	4.17	1790	18
17:59:18 Event #4 ISIP Annulus Press 830 (psi)							
17:59:18	830	0.00	0.00	4.36	4.36	1459	0
17:59:47	756	0.00	0.00	4.36	4.36	1384	0
18:00:17	642	0.00	0.00	4.36	4.36	1271	0

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
==== Stage Total 4.36 (bbl) ====							
18:00:20 Stage #2 PUMP							
18:00:45	1465	0.73	0.73	0.36	4.72	2039	26
18:01:15	1359	0.19	0.19	0.50	4.86	1951	6
18:01:45	1313	0.16	0.16	0.59	4.95	1907	5
18:02:15	1319	0.15	0.15	0.66	5.02	1913	5
18:02:45	1317	0.16	0.16	0.74	5.10	1911	5
18:02:56 Event #5 SURGE OFF							
18:03:13	13	0.72	0.72	0.85	5.21	646	0
==== Stage Total 0.91 (bbl) ====							
18:03:18 Stage #3 PUMP							
18:03:41	1115	1.05	1.05	0.32	5.60	1685	29
18:04:11	1108	1.10	1.10	0.87	6.14	1679	30
18:04:41	1082	1.11	1.11	1.42	6.69	1655	30
18:05:11	1025	1.14	1.14	1.99	7.26	1599	29
18:05:41	1012	1.14	1.14	2.56	7.83	1588	28
18:06:11	1039	1.51	1.51	3.17	8.45	1613	39
18:06:41	1068	1.57	1.57	3.96	9.23	1645	41
18:07:11	1044	1.58	1.58	4.74	10.01	1623	40
18:07:41	1033	1.58	1.58	5.53	10.80	1616	40
18:08:11	1021	1.58	1.58	6.32	11.59	1607	40
18:08:41	1006	1.80	1.80	7.13	12.40	1593	44
18:09:11	1018	2.05	2.05	8.14	13.41	1607	51
18:09:41	1009	2.05	2.05	9.16	14.44	1603	51
18:10:11	1020	2.59	2.59	10.31	15.58	1615	65
18:10:41	1016	2.59	2.59	11.61	16.88	1617	64
18:11:11	1003	3.12	3.12	13.03	18.31	1606	77
18:11:41	994	3.17	3.17	14.58	19.85	1604	77
18:12:11	1002	3.55	3.55	16.33	21.61	1616	87
18:12:41	997	3.66	3.66	18.11	23.39	1611	89
18:13:11	1010	4.03	4.03	20.10	25.37	1621	100
18:13:41	1025	5.03	5.03	22.51	27.78	1628	126
18:14:11	1026	5.18	5.18	25.03	30.30	1627	130
18:14:41	1057	5.96	5.96	28.00	33.27	1650	154
18:15:11	1056	5.97	5.97	30.98	36.26	1649	155
18:15:41	1070	6.16	6.16	34.00	39.27	1661	162
18:16:11	1106	7.04	7.04	37.45	42.72	1686	191

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
18:16:41	1122	7.06	7.06	40.98	46.26	1702	194
18:17:11	1127	7.07	7.07	44.52	49.80	1707	195
18:17:41	1129	7.03	7.03	48.05	53.32	1709	194
18:18:11	1151	7.24	7.24	51.57	56.84	1729	204
18:18:41	1248	10.09	10.09	56.22	61.49	1784	309
18:19:11	1243	10.13	10.13	61.29	66.56	1778	309
18:19:41	1246	10.13	10.13	66.35	71.62	1782	309
18:20:11	1242	10.15	10.15	71.42	76.69	1778	309
18:20:35 Event #6 ISIP Annulus Press 862 (psi)							
18:20:39	854	2.51	2.51	72.81	78.08	1475	53
18:21:09	817	0.00	0.00	73.42	78.70	1446	0
18:21:39	794	0.00	0.00	73.52	78.79	1423	0
18:22:09	774	0.02	0.02	73.67	78.94	1403	0
18:22:39	757	0.00	0.00	73.67	78.94	1386	0
18:23:09	741	0.00	0.00	73.67	78.94	1370	0
18:23:39	725	0.00	0.00	73.67	78.94	1354	0
18:24:09	710	0.73	0.73	73.92	79.19	1339	13
==== Stage Total 73.96 (bbl) ====							
18:24:26 Stage #4 PUMP							
18:24:37	1245	8.14	8.14	1.07	80.30	1811	248
18:25:07	1368	10.95	10.95	6.05	85.28	1890	367
18:25:37	1373	12.06	12.06	11.91	91.14	1875	406
18:26:07	1355	12.06	12.06	17.93	97.16	1857	400
18:26:37	1348	12.05	12.05	23.95	103.18	1850	398
18:27:07	1355	12.03	12.03	29.98	109.21	1858	400
18:27:37	1269	1.55	1.55	35.73	114.96	1895	48
18:27:48 Event #7 ISIP Annulus Press 941 (psi)							
18:28:05	886	0.00	0.00	35.80	115.02	1514	0
18:28:10 Event #8 Stop Pumping							
18:28:33	848	0.00	0.00	35.80	115.02	1477	0
18:29:03	823	0.00	0.00	35.80	115.02	1452	0
18:29:33	803	0.00	0.00	35.80	115.02	1432	0
18:30:03	787	0.00	0.00	35.80	115.02	1415	0
18:30:33	768	0.00	0.00	35.80	115.02	1397	0
18:31:03	758	0.00	0.00	35.80	115.02	1386	0
18:31:33	745	0.00	0.00	35.80	115.02	1374	0

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

TIME	Annulus Pr (psi)	Clean Rate (bpm)	Slurry Rt (bpm)	Stage Vol (bbl)	Job Volume (bbl)	BHP(Calc) (psi)	HHP
18:32:03	733	0.00	0.00	35.80	115.02	1361	0
18:32:33	721	0.00	0.00	35.80	115.02	1349	0
18:33:03	709	0.00	0.00	35.80	115.02	1338	0

18:33:13 Event #9 5 Min Shutin Pres. Annulus Press 705 (psi)

18:33:31	699	0.00	0.00	35.80	115.02	1327	0
18:34:01	531	0.00	0.00	35.80	115.02	1160	0
18:34:31	164	0.00	0.00	35.80	115.02	792	0
18:35:01	7	0.00	0.00	35.80	115.02	699	0
18:35:31	5	0.00	0.00	35.80	115.02	699	0
18:36:01	3	0.00	0.00	35.80	115.02	699	0
18:36:31	3	0.00	0.00	35.80	115.02	699	0

==== Stage Total 35.80 (bbl) ====

18:36:42 Event #10 End Job

CUSTOMER:	S.W.E.P.I.	DATE:	10-Feb-1996
WELL DESC:	LOUD C1-19	TICKET #:	872103.4
FORMATION:	ANTRIM	JOB TYPE:	WATER FRAC

Customer:	S.W.E.P.I.	Date:	10-Feb-1996
Well Desc:	LOUD C1-19	Ticket #:	872103.4
Formation:	ANTRIM	Job Type:	WATER FRAC

CUSTOMER INFORMATION

Customer	S.W.E.P.I.	County	MONTMORENCY
Contractor	BECKMAN	Town	29N
Lease	LOUD	Section	19
Location	25954	Range	3E
Formation	ANTRIM	Permit No	49096
Job Type	WATER FRAC	Well No	C1-19
Country	U.S.A.	Field Name	ALBERT LOUD
State	MICHIGAN		

Customer Representative ALAN LOCKWOOD
Halliburton Operator D.NELSON

REMARKS ABOUT JOB

FRAC JOB

2-10-96

THANKS

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

WELL CONFIGURATION INFORMATION

Packer Type NONE Depth 0 ft
Bottom Hole Temp. 60.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	1160	1160	4.950	5.500	1.995	2.375
2	1261	1261	4.950	5.500	0.000	0.000

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	1260	1261	2

Customer:	S.W.E.P.I.	Date:	10-Feb-1996
Well Desc:	LOUD C1-19	Ticket #:	872103.4
Formation:	ANTRIM	Job Type:	WATER FRAC

JOB SCHEDULE
STAGE DESCRIPTIONS

Stage	Description
1	PUMP AT CUSTOMER REQUEST

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

JOB SCHEDULE
STAGE INFORMATION

	1	2	3	4
Planned Clean Volume (bbl)	0.00	0.00	0.00	0.00
Actual Clean Volume (bbl)	4.36	0.91	73.96	35.80
Proppant Size				
Proppant Type				
Proppant Volume Coef (gal/lb)				
Planned Fluid Rate (bpm)	0.00	0.00	0.00	0.00
Planned Prop Conc (lb/gal)	0.00	0.00	0.00	0.00
Planned Gas Rate (bpm)				
Fluid Type	10# NaCl	10# NaCl	10# NaCl	10# NaCl
Base Fluid Density (lb/gal)	9.60	9.60	9.60	9.60
N Prime	1.0000	1.0000	1.0000	1.0000
K Prime (#s^n/ft2)	0.000036	0.000036	0.000036	0.000036
Viscosity (cp)	1.7	1.7	1.7	1.7

Customer:	S.W.E.P.I.	Date:	10-Feb-1996
Well Desc:	LOUD C1-19	Ticket #:	872103.4
Formation:	ANTRIM	Job Type:	WATER FRAC

MISCELLANEOUS JOB PARAMETERS

Well Treated Down	Annulus	
Static Column Available	No	
Job Type	Gel	
Gel System	9.6# BRINE	
Delayed Crosslinker Used	No	
Surface Earth Temperature	60.0	(Deg F)
Average Wellhead Trmt Press	1500	(psi)
Surface Slurry Temperature	50.0	(Deg F)
Bottom Hole Treating Temp	60.0	(Deg F)
Initial Bottom Hole Pressure	2100	(psi)
Wellbore Fluid Density	9.60	(lb/gal)
Wellbore Fluid n'	0.7150	
Wellbore Fluid K'	0.000560	(#s^n/ft2)
Volume Used for Stage Info	Clean	

Customer: S.W.E.P.I.
Well Desc: LOUD C1-19
Formation: ANTRIM

Date: 10-Feb-1996
Ticket #: 872103.4
Job Type: WATER FRAC

PROUDLY PERFORMED BY:

Employee	Emp. ID	Equipment	Equip. ID
D.NELSON	D0933	FRAC VAN II	41516
K.AKIYAMA	D5101	ARC BLENDER	53086
J.HARRIER	G1728	IRON TRK	53088
D.HIPKINS	E0194	HT-400	52609
B FRIEND	D9401	PICKUP	94378J
M.KNOX	H1403	SAND DUMP	75736