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File

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-122
Revised 10-1-78

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 6-25-92		JUL - 5 1992	
Company Sante Fe Energy				Connection					
Pool S. Gaults Bluff Atoka				Formation Atoka				Unit	
Completion Date 5-30-92		Total Depth 12,185		Plug Back TD 12,090		Elevation 2962.4		Farm or Lease Name Harroun Trust 31 Fed	
Csg. Size 4.5		Set At		Perforations: From 11910 To 11951		Well No. Com #1			
Tub. Size 2.375		Set At 1.995 11830		Perforations: From To		Unit Sec. Twp. Rge. W 31 23 29			
Type Well - Single - Broadhead - G.G. or G.O. Multiple						Packer Set At		County Eddy	
Producing Thru		Reservoir Temp. °F 189 • 11830		Mean Annual Temp. °F 60.0		Baro. Press. - P _a 13.2		State NM	
L 11930		H 11930		G _g 0.580		% CO ₂		% N ₂	
						% H ₂ S		Prover	
								Meter Run 2.067	
								Taps Flange	

FLOW DATA						TUBING DATA		BHP DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI									6956	189	24
1.	2.067	x 1.000		475	4.0	105			6670	189	1.0
2.	2.067	x 1.000		480	6.0	110			6565	189	1.0
3.	2.067	x 1.000		480	7.0	110			6526	189	1.0
4.	2.067	x 1.000		495	22.0	98			6022	189	1.0
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1	4.95	44.19	488.2	.9594	1.3131	1.0295	283
2	4.95	54.40	493.2	.9551	1.3131	1.0288	347
3	4.95	58.76	493.2	.9551	1.3131	1.0288	375
4	4.95	105.74	508.2	.9653	1.3131	1.0322	684
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature	P.S.I.A.	P.S.I.A.
1	.72	564	1.60	.944	0		0.580	XXXXXXX	674	352		
2	.73	570	1.62	.945								
3	.73	570	1.62	.945								
4	.75	558	1.58	.939								
5												

NO.	P _r ²	P _w	P _r ²	P _r ² - P _w ²
1	44665	5420	29374	2878
2	43273	5325	28356	3897
3	42761	5290	27982	4270
4	36424	4838	23410	8842
5				

(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 3.6475$

AOF = Q $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1994$

(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 2.9138$

Absolute Open Flow 1994 Mcfd @ 15.025		Angle of Slope 50.4	Slope, n .826
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Remarks:

Approved By Division	Conducted By: Bruce Stangley/KSLQ	Calculated By: [Signature]	Checked By:
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REPORT NO.
132875

PAGE NO. 1

TEST DATE:
25-JUN-92

S T A R

Schlumberger Testing Data Report
Pressure Data Report

Schlumberger

COMPANY: Santa Fe Energy		WELL: Harroun Trust "31" Fed Com #1	
TEST IDENTIFICATION		WELL LOCATION	
Test Type	S1\Bhp Pts	Field	
Test No.	One	County	Eddy
Formation	Atoka	State	New Mexico
Test Interval (ft)	11910 to 11951		
COMPLETION CONFIGURATION		TEST STRING CONFIGURATION	
Total Depth (MD/TVD) (ft)		Tubing Length (ft)/I.D. (in)...	11830 / 1.995
Casing/Liner I.D. (in)	4.5 / 3.92	Tubing Length (ft)/I.D. (in)...	
Hole Size (in)		Packer Depth (ft)	11830,
Perforated Interval (ft)	11910 to 11951	Gauge Depth (ft)/Type	11824/K3-35048
Shot Density (shots/ft)		Downhole Valve (Y/N)/Type	
Perforation Diameter (in)		TEST CONDITIONS	
Net Pay (ft)		Tbg/Wellhead Pressure (psi) ..	
		Separator Pressure (psi)	
INTERPRETATION RESULTS		ROCK/FLUID/WELLBORE PROPERTIES	
Model of Behavior		Oil Density (deg. API)	
Fluid Type Used for Analysis..		Basic Solids (%)	
Reservoir Pressure (psi)		Gas Gravity	
Transmissibility (md.ft/cp) ..		GOR (scf/STB)	
Effective Permeability (md) ..		Water Cut (%)	
Skin Factor		Viscosity (cp)	
Storativity Ratio, Omega		Total Compressibility (1/psi)..	
Interporos.Flow Coef.,Lambda..		Porosity (%)	
Distance to an Anomaly (ft) ..		Reservoir Temperature (F)	187
Radius of Investigation (ft)...		Form.Vol.Factor (bbl/STB)	

PRODUCTION RATE DURING TEST: Data Report

COMMENTS:

This data report on the Harroun Trust "31" Fed Com #1 contains the bottom hole pressures and surface production during the back-pressure test for the New Mexico Oil Conservation Division. The C-122 form with the back-pressure plot is included. All calculations are performed and all additional information available at the time of this report are on the C-122 form.

Thank you for using Schlumberger. For questions about this report please call Gil Hilsman (915) 694-1986.

WELL TEST INTERPRETATION REPORT #:132875		PAGE: 2.
CLIENT : Santa Fe Energy		30-JUN-92
REGION :CSD	SEQUENCE OF EVENTS	FIELD:
DISTRICT:Midland		ZONE :Atoka
BASE :Midland		WELL :HTFC1
ENGINEER:Brown / Sting		LOCATION:

DATE	TIME (HR:MIN)	DESCRIPTION	ET (MINS)	BHP (PSIA)	WHP (PSIG)
25-JUN	08:00	Arr. loc., well shut in.	0		
	10:46	In lub. with gauges.	166		
	11:20	On seat nipple with gauges	200		5912
	11:30	Pressurize line.	210		
	11:40		220		5665
	13:00	End 1st rate	300		5620
	14:00	End 2nd rate	360		5535
	15:00	End 3rd rate	420		5505
	16:00	End 4th rate	480		5352
	16:02	Off seat nipple w/gauges	482		5052
	16:05	Gradient Stop 11830'	485		
	16:20	Gradient Stop 11000'	500		
	16:38	Gradient Stop 10000'	518		
	16:55	Gradient Stop 8000'	535		
	17:11	Gradient Stop 6000'	551		
	17:32	Gradient Stop 3000'	572		
	18:00	Gradient Stop 25'	600		
	19:00	Leave loc., well flowing.	660		

WELL TEST INTERPRETATION REPORT #:132875		PAGE: 3.
CLIENT : Santa Fe Energy		30-JUN-92
REGION :CSD	Production Report	FIELD:
DISTRICT:Midland		ZONE :Atoka
BASE :Midland		WELL :HTFC1
ENGINEER:Brown / Sting		LOCATION:

DATE OR TIME	WLLD PSIG	HEATER CHOKE	ORIF SIZE INCH	STAT PSIG	DIFF INCH WATR	MTR.R DEG F	GAS GRAV	GAS RATE MCF/D	OIL CUMUL BBL	OIL RATE BBL/D	WATER CUMUL BBL	WATER RATE BBL/D	GAS OIL RATIO
08:00													
08:00													
08:00													
08:00													
08:00													
11:20													
11:30													
11:30													
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15:30													
15:45													
16:00													

WELL TEST INTERPRETATION REPORT #:132875		PAGE: 4.
CLIENT : Santa Fe Energy		30-JUN-92
REGION :CSD	Production Report cont.	FIELD:
DISTRICT:Midland		ZONE :Atoka
BASE :Midland		WELL :HTFC1
ENGINEER:Brown / Sting		LOCATION:

DATE OR TIME	WLHD PSIG	HEATER CHOKE	ORIF SIZE INCH	STAT PSIG	DIFF INCH WATER	MTR.R DEG F	GAS GRAV	GAS RATE MCF/D	OIL CUMUL BBL	OIL RATE BBL/D	WATER CUMUL BBL	WATER RATE BBL/D	GAS OIL RATIO
16:00													
16:00													
16:00													

End 4th rate.

No measurable liquids produced to surface during this test.

BACK PRESSURE CURVE

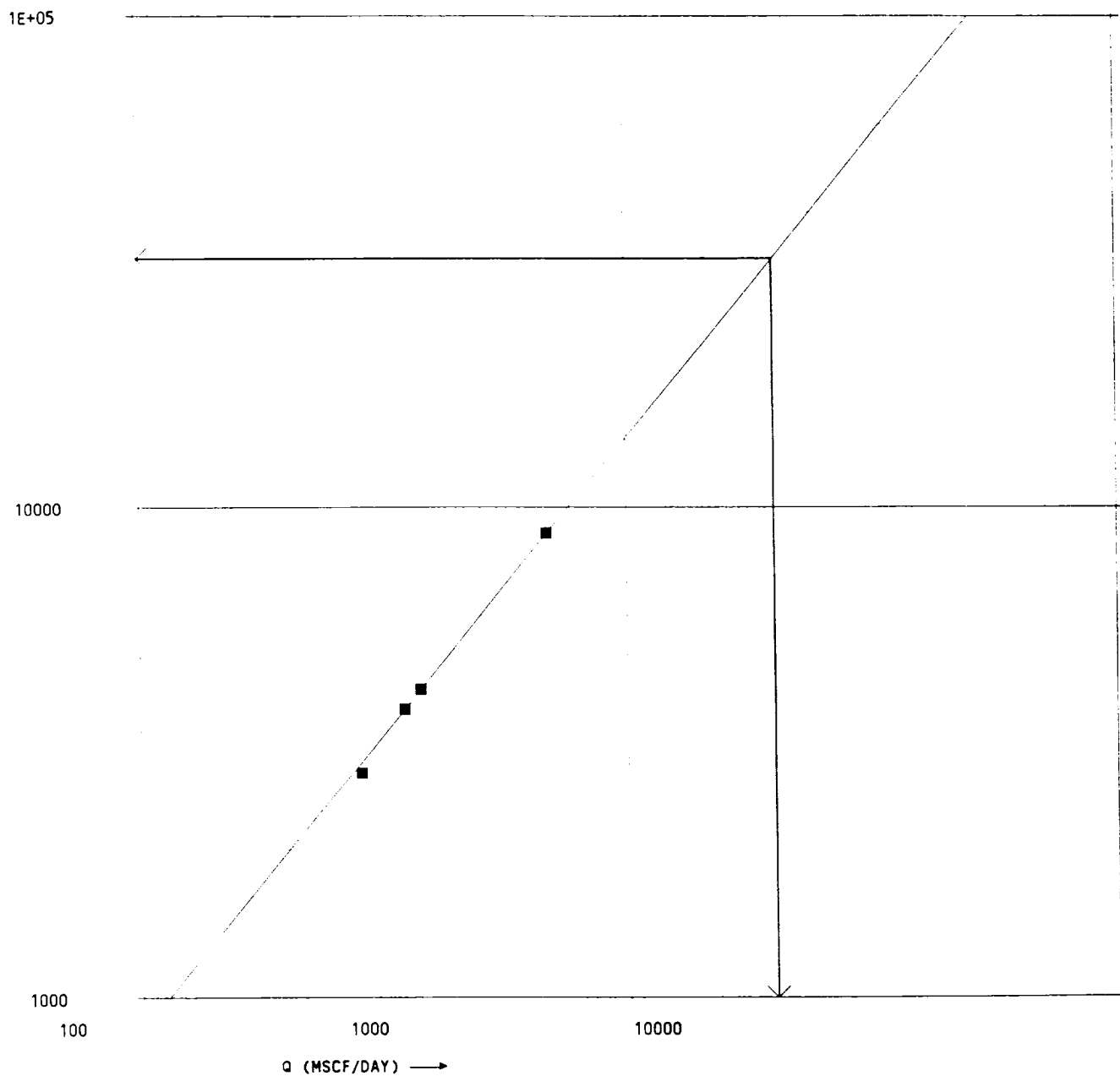
CLIENT: Sante Fe Energy

Test Date: 25-Jun-1992

WELL: Harroun Trust "31" Fed #1

County: Eddy, NM

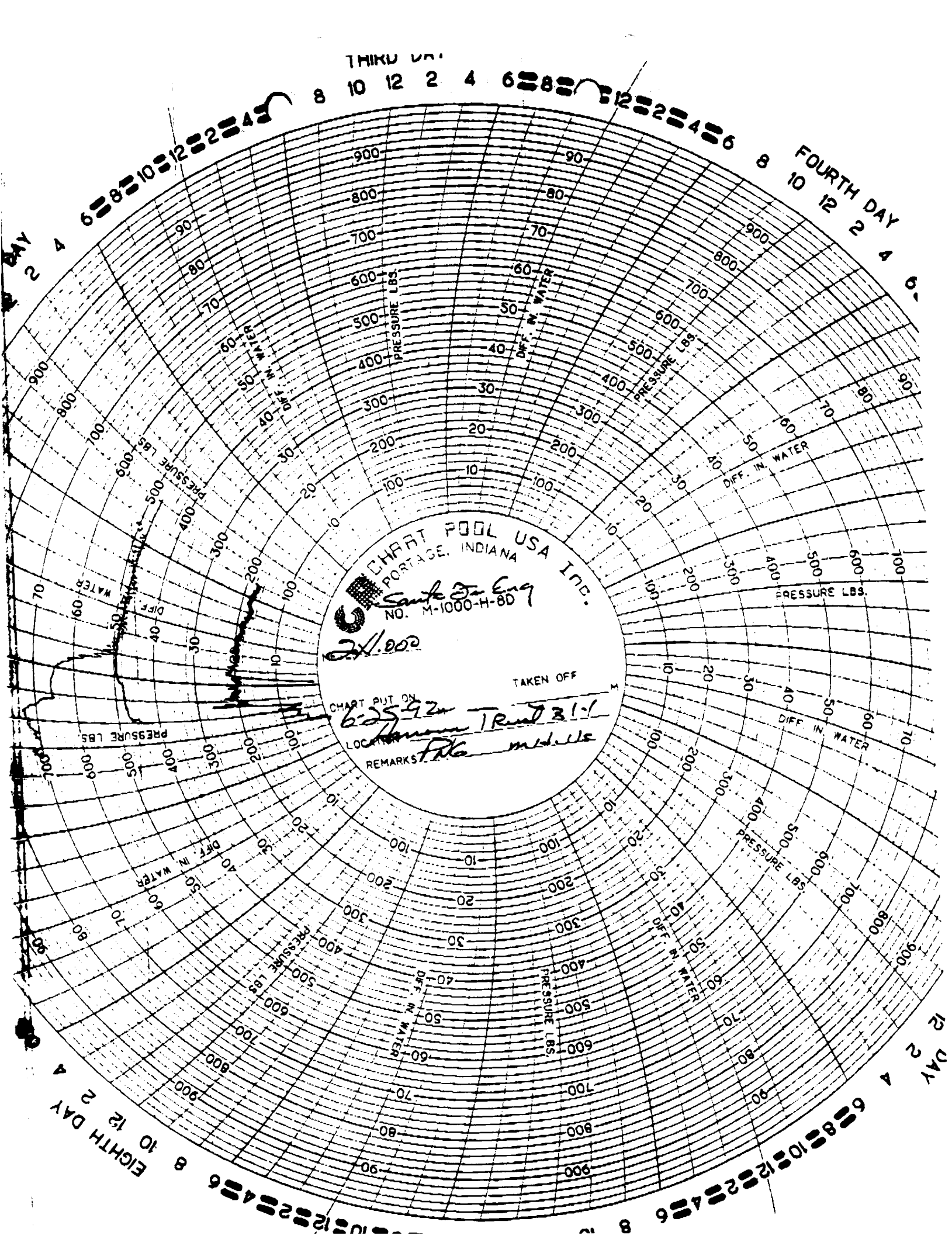
$P_f^2 - P_s^2$ (10^3 PSI²)



Well Tester: Bruce S. Shively / 920

SCHLUMBERGER Testing

$\theta = 50.443$ degrees
 $n = 0.8260$
AOF = 1994.0 MSCF/DAY



THIRD DAY

FOURTH DAY

CHART POOL USA INC.
PORTAGE, INDIANA
Santa Fe Eng
NO. M-1000-H-80
24.000

TAKEN OFF
CHART PUT ON *6-25-92*
LOCATION *Trinity Road 31.1*
REMARKS *F16 missile*

EIGHTH DAY

BOTTOMHOLE PRESSURE LOG

FIELD REPORT NO. 132875

COMPANY : Santa Fe Energy

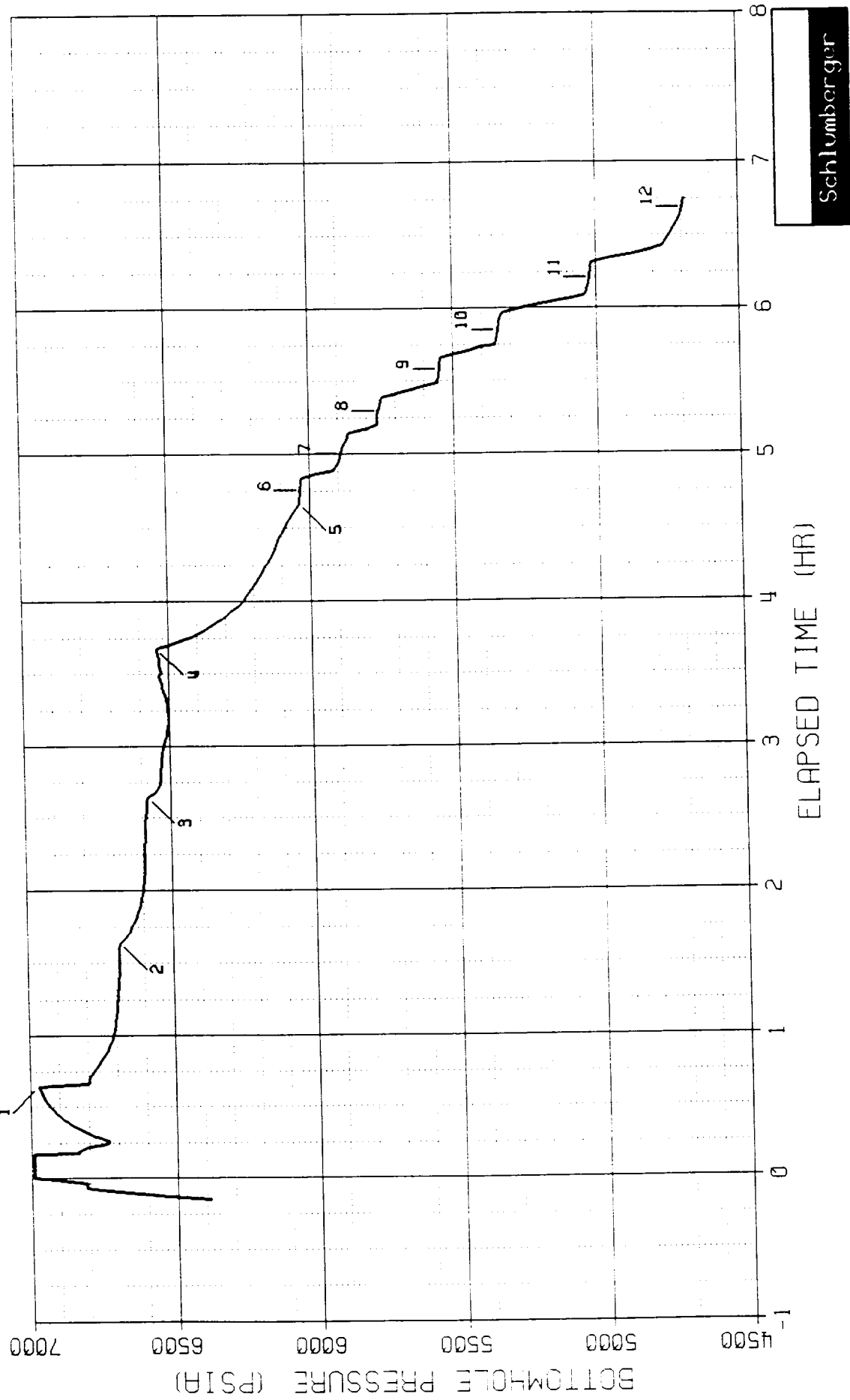
INSTRUMENT NO. K3-35048

WELL : Harroun Trust "31" Fed Com #1

DEPTH : 11830 FT

CAPACITY : 8500 PSI

PORT OPENING : OUTSIDE



 ** WELL TEST DATA PRINTOUT **

COMPANY: Santa Fe Energy
 WELL: Harroun Trust "31" Fed Com #1

FIELD REPORT NO. 132875
 INSTRUMENT NO. K3-35048

REORDER CAPACITY: 8500 PSI PORT OPENING: OUTSIDE DEPTH: 11830 FT
 TEMPERATURE: 187 DEG F

ABEL POINT INFORMATION

	TIME OF DAY	DATE		ELAPSED TIME, HR	BOT HOLE PRESSURE PSIA	DEPTH FT
=	HH:MM:SS	DD-MMM	EXPLANATION			
1	11:58:35	25-JUN	END SHUT-IN & START FLOW	0.643	6970.8	
2	12:58:02	25-JUN	FLOW POINT	1.634	6684.6	
3	13:58:13	25-JUN	FLOW POINT	2.637	6579.6	
4	15:00:19	25-JUN	FLOW POINT	3.672	6541.0	
5	15:59:38	25-JUN	FLOW POINT	4.661	6037.2	
6	16:05:01	25-JUN	GRADIENT STOP	4.750	6032.9	11830.0
7	16:20:09	25-JUN	GRADIENT STOP	5.003	5890.4	11000.0
8	16:37:47	25-JUN	GRADIENT STOP	5.297	5759.6	10000.0
9	16:54:52	25-JUN	GRADIENT STOP	5.581	5547.4	8000.0
0	17:10:47	25-JUN	GRADIENT STOP	5.846	5343.7	6000.0
1	17:32:18	25-JUN	GRADIENT STOP	6.205	5022.1	3000.0
2	18:01:20	25-JUN	GRADIENT STOP	6.689	4696.3	25.0

ET	PW	ET	PW	ET	PW
-9.32	6386.62	62.32	6707.11	174.42	6529.18
-8.18	6531.32	64.26	6703.89	176.07	6528.11
-6.81	6634.22	66.05	6702.82	177.65	6527.04
-5.45	6737.12	68.06	6700.68	179.94	6520.61
-4.45	6811.08	70.21	6696.39	182.24	6517.39
-3.59	6811.08	72.65	6695.32	184.46	6510.96
-2.22	6811.08	75.09	6692.10	186.11	6508.82
-1.43	6868.96	77.96	6692.10	187.98	6506.67
-0.86	6916.12	80.11	6689.96	189.84	6503.46
0.00	6989.01	82.62	6688.89	192.21	6504.53
4.81	6989.01	85.49	6687.82	194.72	6506.67
10.18	6989.01	87.93	6686.74	197.01	6507.74
10.33	6837.88	90.22	6686.74	199.24	6510.96
11.19	6836.80	93.16	6686.74	200.81	6514.17
12.19	6823.94	95.67	6685.67	202.68	6518.46
13.05	6803.58	98.04	6684.60	204.19	6522.75
13.41	6771.42	99.33	6672.81	205.69	6524.89
13.91	6752.13	100.48	6664.23	207.20	6529.18
14.34	6744.63	101.70	6655.66	208.70	6532.40
14.77	6733.91	102.99	6648.16	210.43	6528.11
15.42	6732.83	104.28	6641.73	211.93	6530.25
15.92	6745.70	105.86	6636.37	213.65	6532.40
16.64	6762.85	107.22	6631.01	215.95	6534.54
17.71	6785.36	109.01	6623.50	217.60	6537.76
18.65	6802.51	110.88	6619.22	219.10	6539.90
19.51	6817.51	112.53	6614.93	220.32	6540.97
20.30	6831.45	114.54	6609.57	221.18	6527.04
21.23	6843.24	116.47	6606.35	221.76	6503.46
22.09	6856.10	118.19	6603.14	222.76	6478.80
23.17	6870.03	120.06	6601.00	223.62	6461.65
24.53	6885.04	121.64	6599.92	224.34	6443.43
25.75	6897.90	123.36	6596.71	225.27	6421.99
27.40	6912.91	125.29	6595.64	226.42	6402.70
28.69	6923.63	127.30	6593.49	227.78	6380.19
30.12	6934.34	129.88	6592.42	229.14	6359.83
31.70	6942.92	132.61	6592.42	230.36	6342.68
33.56	6954.71	135.55	6592.42	231.65	6328.74
35.50	6961.14	138.20	6592.42	232.94	6310.52
37.29	6967.57	140.28	6591.35	234.16	6296.59
38.59	6970.79	142.94	6590.28	235.53	6282.65
39.66	6800.36	145.30	6590.28	237.10	6263.36
40.09	6798.22	148.17	6590.28	238.54	6248.35
41.31	6796.07	150.68	6587.06	240.33	6234.42
41.88	6796.07	152.98	6583.85	242.05	6226.92
43.46	6787.50	155.34	6582.77	243.56	6216.20
44.90	6778.92	156.85	6581.70	245.28	6207.62
46.47	6770.35	158.21	6579.56	246.79	6195.83
48.05	6760.70	159.43	6566.70	248.44	6186.19
49.70	6752.13	160.58	6553.83	250.16	6178.68
51.85	6739.27	162.09	6543.11	251.66	6171.18
53.43	6730.69	163.74	6536.68	253.17	6164.75
55.15	6725.33	165.67	6533.47	254.75	6156.17
56.80	6718.90	167.68	6532.40	256.04	6147.60
58.67	6714.61	169.69	6532.40	257.47	6141.17
60.53	6710.33	172.20	6530.25	258.84	6133.66

ET	PW	ET	PW	ET	PW
260.34	6127.23	309.68	5826.04	353.51	5341.56
261.56	6122.95	310.33	5796.03	356.09	5335.13
263.00	6118.66	312.05	5763.87	358.10	5327.63
264.93	6112.23	315.28	5762.80	359.96	5263.31
266.72	6105.80	317.79	5759.58	361.54	5196.86
268.16	6098.29	320.01	5752.08	362.97	5142.19
269.59	6090.79	323.17	5746.72	363.98	5087.53
271.53	6083.29	324.60	5696.34	365.20	5044.65
273.39	6074.71	325.89	5658.83	366.06	5035.01
275.26	6061.85	326.90	5632.03	370.14	5025.36
277.63	6048.99	327.83	5596.66	372.30	5022.15
279.63	6037.20	329.26	5553.79	376.38	5020.00
285.01	6032.91	332.28	5548.43	378.82	5017.86
288.31	6030.77	334.86	5547.36	380.69	4947.11
290.18	6029.69	336.87	5545.21	382.05	4882.80
291.90	5977.17	339.74	5542.00	383.56	4824.92
293.12	5915.00	341.31	5493.76	385.64	4765.97
296.92	5897.85	342.60	5446.60	390.23	4740.25
300.15	5890.35	343.90	5408.01	397.97	4703.80
303.09	5882.85	344.90	5354.42	401.34	4696.30
305.74	5871.06	348.49	5347.99	405.00	4689.87
308.32	5863.56	350.78	5343.70		