TEST REPORT

(303) 473-6909
P.O. Box 2260
Colorado Springs, CO 80901

CRUDE OIL TESTING INC.

Test Ticket No. 2246

Company Petroleum Inc. Date 9-19-82
Company Address Garvey Bldg. Wichita, Ks No. of Charts 5
Location: Sec. 20 Twp. 20S Rge. 20W Co. Pawnee State Ks.
Well Name And Number Miller #1 "AV" Tester Rod Lewis
Contractor D N B Rig No. #2 Co. Rep. Ken Johnson

Formation Mississippi Zone ---- Type of Test Conventional

DST# 1

Interval 4,323 To 4,335 Total Depth 4,335
Open 15 Shut In 30 Open 60 Shut In 120
Packer(s) Set 8:00 A.M. P.M. Started off Bottom 11:45 A.M. P.M.
Blow 1 st opening -- good blow
@ nd opening -- good blow

Recovery

Total Feet 580'
Recovered 40 Ft. of Heavy oil cut mud
Recovered 120 Ft. of Frothy oil
Recovered 240 Ft. of Frothy muddy oil
Recovered 60 Ft. of Heavy oil cut muddy water
Recovered 120 Ft. of Muddy water
Recovered Ft. of
Gravity (Oil) -- Corrected To Temp. -- Water Chlorides 26,000 PPM

Pressures & Temp. (Office Reading If Applicable)

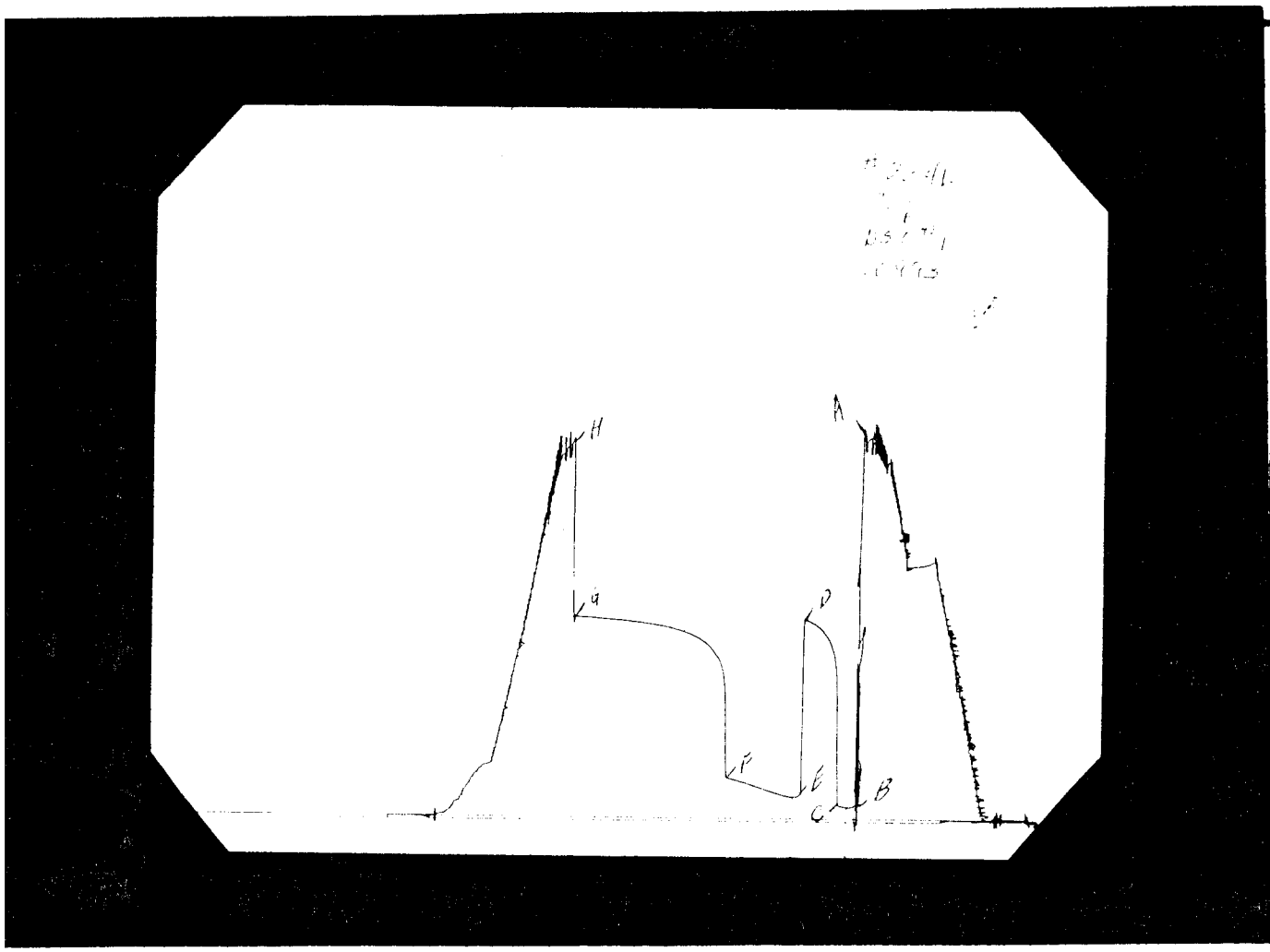
Initial Hydrostatic Pressure 2,239 Final Hydrostatic Pressure 2,217
Initial Closed In Pressure 1,210 Final Closed In Pressure 1,221
Initial Flow Pressure 65 To 76 Final Flow Pressure 130 To 239
Test Area Temperature 125°

Engineering Date

Elevation 2,171 G.L.
Mud Viscosity 42 Mud Weight 9.7 Water Loss 16.5
Chlorides 54,000 P.P.M. Type of Mud Starch Anchor Length 12'
Hole Size 7 7/8 Casing Size 8 5/8 Surface Choke 3/4 Bottom Choke 3/4
Drill Pipe Length 3647 I.D. 3.8 In. Weight Pipe Length 631 I.D. 2.76 In.
Drill Collar Length 29' I.D. 2.25 In.
Top Packer Depth. 4323 Bottom Packer Depth. --- Packer Size 6 3/4
Test Tool Size 5 1/2 In. Tool Joint Size 4 1/2 X.H. In.
Did Well Flow NO Reversed Out NO
Recorder Type and No. AK-1 10993 Clock Range No. 23935 12 Hr.
Recorder Type and No. AK-1 10992 Clock Range No. 23934 12 Hr.
Extra Equipment NONE
Remarks
Chart evaluation

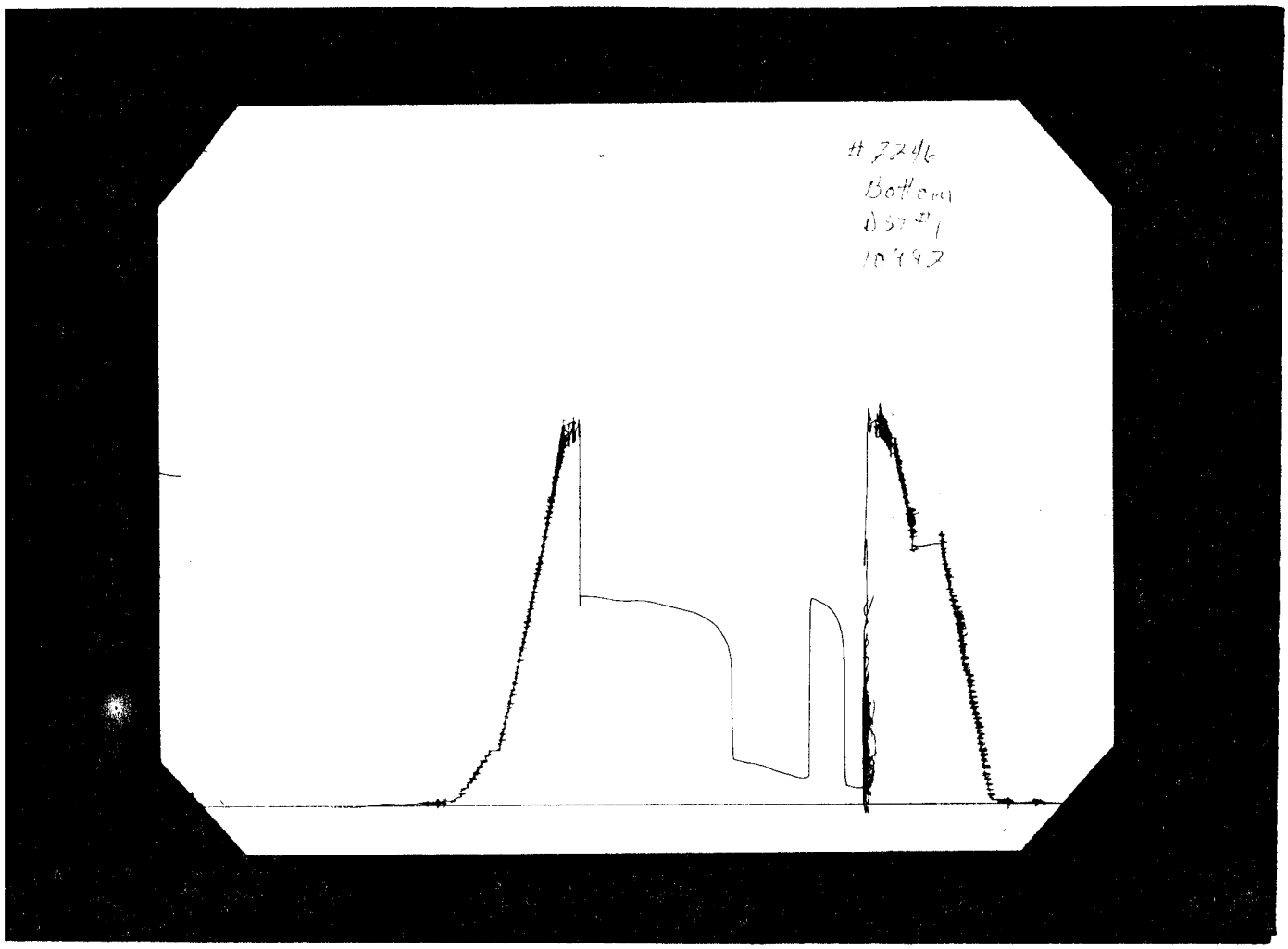
Thank You!

Price of Job $ 755.00



This is an actual photograph of recorder chart.

POINT		PRESSURE Field Reading	Office Reading	
(A)	Initial Hydrostatic Mud	2,239	2,340	PSI
(B)	First Initial Flow Pressure	65	72	PSI
(C)	First Final Flow Pressure	76	87	PSI
(D)	Initial Closed-in Pressure	1,210	1,218	PSI
(E)	Second Initial Flow Pressure	130	135	PSI
(F)	Second Final Flow Pressure	239	253	PSI
(G)	Final Closed-in Pressure	1,221	1,232	PSI
(H)	Final Hydrostatic Mud	2,217	2,292	PSI



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POINT		PRESSURE Field Reading	Office Reading
(A)	Initial Hydrostatic Mud		PSI
(B)	First Initial Flow Pressure		PSI
(C)	First Final Flow Pressure		PSI
(D)	Initial Closed-in Pressure		PSI
(E)	Second Initial Flow Pressure		PSI
(F)	Second Final Flow Pressure		PSI
(G)	Final Closed-in Pressure		PSI
(H)	Final Hydrostatic Mud		PSI

CRUDE OIL TESTING COMPANY

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Date 9-19-82 Test Ticket No. 2246

Recorder No. Kuster AK-1 10093 Capacity 4250 PSI Location 4325 Ft.

Clock No. 23935 Elevation 2171 G.L. Well Temperature 125 °F

Point	Pressure		Field Time	Time Computed
Initial Hydrostatic Mud	2,339 P.S.I.	Open Tool	8:00 AM	
First Initial Flow Pressure	69 P.S.I.	First Flow Pressure	15 Mins.	— Mins.
First Final Flow Pressure	82 P.S.I.	Initial Closed-in Pressure	30 Mins.	27 Mins.
Initial Closed-in Pressure	1,215 P.S.I.	Second Flow Pressure	60 Mins.	— Mins.
Second Initial Flow Pressure	134 P.S.I.	Final Closed-in Pressure	120 Mins.	123 Mins.
Second Final Flow Pressure	253 P.S.I.			
Final Closed-in Pressure	1,232 P.S.I.			
Final Hydrostatic Mud	2,292 P.S.I.			

PRESSURE BREAKDOWN

First Flow Pressure
Breakdown: 5 Inc.
of 3 mins. and a
final inc. of — Min.

Point Mins.	Press.
00	69
03	70
06	70
09	71
12	77
15	82

Initial Shut-In
Breakdown: 9 Inc.
of 3 mins. and a
final inc. of 2 Min.

Point Minutes	Press.
00	82
03	972
06	1,057
09	1,105
12	1,133
15	1,160
18	1,178
21	1,190
24	1,203
27	1,213
30	1,215

Second Flow Pressure
Breakdown: 20 Inc.
of 3 mins. and a
final inc. of — Min.

Point Minutes	Press.
00	134
03	135
06	135
09	137
12	142
15	146
18	153
21	160
24	169
27	177
30	184
33	192
36	200
39	208
42	215
45	221
48	228
51	234
54	241
57	247
60	253

Final Shut-In
Breakdown: 41 Inc.
of 3 mins. and a
final inc. of — Min.

Point Minutes	Press.
00	253
03	886
06	964
09	998
12	1,030
15	1,056
18	1,077
21	1,092
24	1,106
27	1,118
30	1,127
33	1,136
36	1,144'
39	1,150
42	1,157
45	1,164
48	1,169
51	1,173
54	1,178
57	1,181
60	1,185

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Date _____ Test Ticket No. _____

Recorder No. _____ Capacity _____ Location _____ P

Clock No. _____ Elevation _____ Well Temperature _____ °

Point	Pressure		Field Time	Time Computed
A Initial Hydrostatic Mud	P.S.I.	Open Tool	M	
B First Initial Flow Pressure	P.S.I.	First Flow Pressure	Mins	Mins
C First Final Flow Pressure	P.S.I.	Initial Closed-in Pressure	Mins	Mins
D Initial Closed-in Pressure	P.S.I.	Second Flow Pressure	Mins	Mins
E Second Initial Flow Pressure	P.S.I.	Final Closed-in Pressure	Mins	Mins
F Second Final Flow Pressure	P.S.I.			
G Final Closed-in Pressure	P.S.I.			
H Final Hydrostatic Mud	P.S.I.			

PRESSURE BREAKDOWN

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: ____ Inc.		Breakdown: ____ Inc.		Breakdown: ____ Inc.		Breakdown: ____ Inc.	
of ____ mins. and a		of ____ mins. and a		of ____ mins. and a		of ____ mins. and a	
final inc. of ____ Min.		final inc. of ____ Min.		final inc. of ____ Min.		final inc. of ____ Min.	
Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1						63	1,189
P 2						66	1,191
P 3						69	1,196
P 4						71	1,198
P 5						74	1,01
P 6						77	1,203
P 7						80	1,207
P 8						83	1,209
P 9						86	1,212
P10						89	1,213
P11						92	1,214
P12						95	1,216
P13						98	1,218
P14						101	1,221
P15						104	1,223
P16						107	1,225
P17						110	1,227
P18						113	1,229
P19						116	1,231
P20						119	1,232
						120	1,232
						123	1,232

EVALUATION

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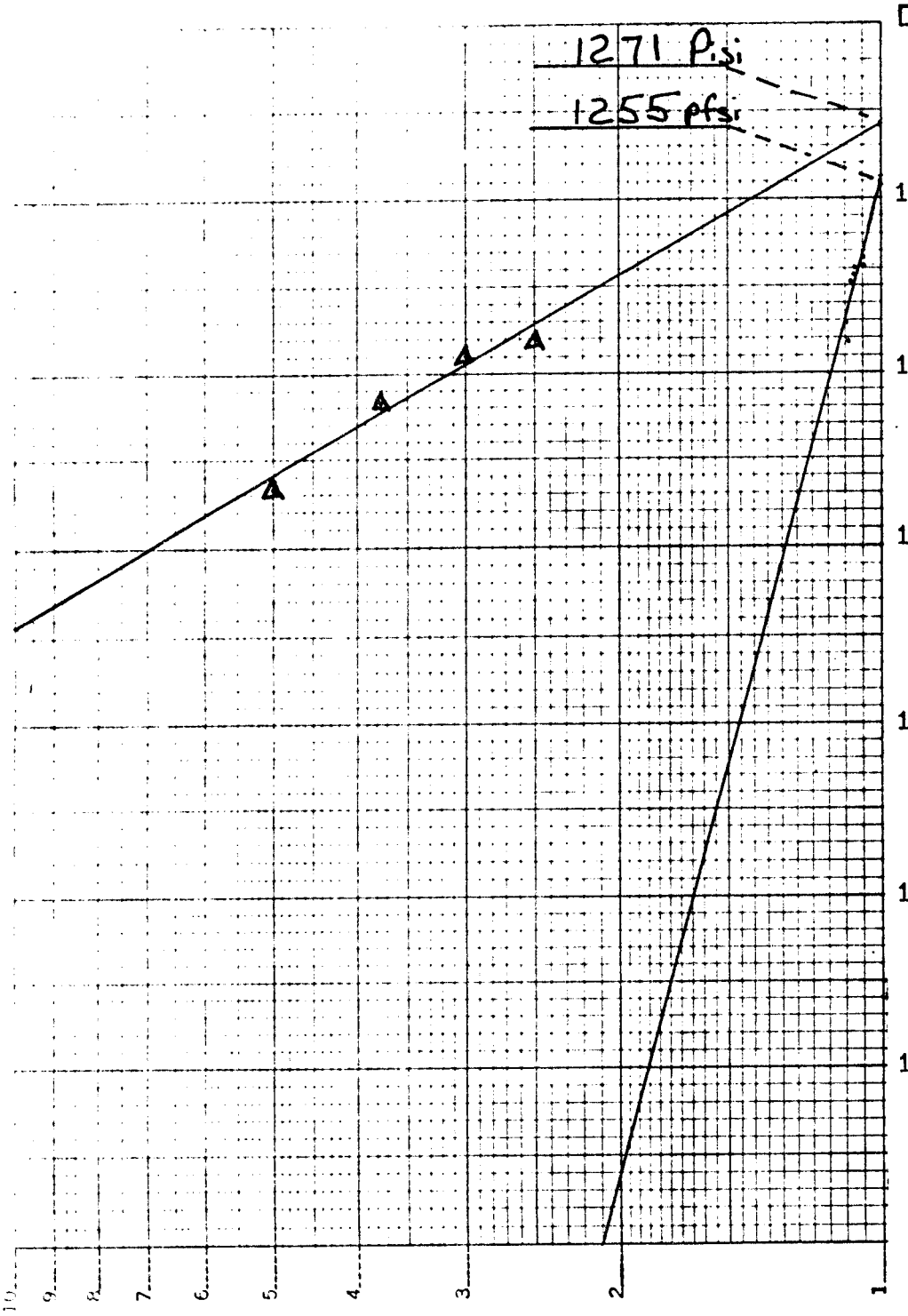
Date 9-19-82



P.S.I. Slope Cycle

$$M = \frac{Psi - Pfsi}{\text{Log of } \frac{T + t}{t}}$$

165.10

Damage Ratio

$$DR = \frac{.183\ Ps - Pf}{M}$$

1.085

Effective Pay

$$\frac{Kh}{B} = \frac{162.6\ Q}{M}$$

38.76 Md. Ft.

Theoretical Potential With Damage Remove

$$Q_1 = Q\ DR$$

42.71 Bbls./Da

Production

$$Q = \frac{1440\ R}{T}$$

1.64 Bbls./Hr

39.36 Bbls./Da

Remarks

Final shut in time was to long as pressure had already about reached static early in period. Zone should produce for an extended period of time since graph lines tend to come togather at the zero line.

DRILL STEM TEST RECOVERY ANALYSIS

(303) 473-6909
P.O. Box 2260
Colorado Springs, CO 8090

COMPANY: Petroleum Inc. LEASE: Miller #1 "AV" DST# 1
SEC: 20 Twp: 20S Rge: 20 W COUNTY: Pawnee STATE: Ks.

VISUAL DST RECOVERY:

40' Heavy oil cut mud 120' Frothy oil
240' Frothy muddy oil
60' Heavy oil cut muddy water
120' Muddy water

CENTRIFUGE PERCENTAGE ANALYSIS

Sample #	Feet of FLUID	Percent of GAS	Percent of OIL	Percent of WATER	Percent of MUD
1	40	3	67	20	15
2	60	—	80	15	5
3	60	5	75	15	5
4	60	10	40	35	15
5	60	10	40	45	5
6	60	10	55	32	3
7	120	—	15	82	3
8	60	—	5	93	2
9	60	—	5	93	2

CALCULATED FLUID RECOVERY FROM PERCENTAGES

(Formula for Calculation)
Percent of individual fluid × Total footage represented in sample

SAMPLE #	TOTAL FOOTAGE	GAS %	×	Total	=	Feet	OIL %	×	Total	=	Feet	WATER %	×	Total	=	Feet	MUD %	×	Total	=	Feet
1	40	3	×	40	=	1.2	67	×	40	=	26.8	20	×	40	=	8	10	×	40	=	4
2	60	-	×	60	=	-	80	×	60	=	48	15	×	60	=	9	5	×	60	=	3
3	60	5	×	60	=	3	75	×	60	=	45	15	×	60	=	9	5	×	60	=	3
4	60	10	×	60	=	6	40	×	60	=	24	35	×	60	=	21	15	×	60	=	9
5	60	10	×	60	=	6	40	×	60	=	24	45	×	60	=	27	5	×	60	=	3
6	60	10	×	60	=	6	55	×	60	=	33	32	×	60	=	19.2	3	×	60	=	1.8
7	120	-	×	-	=	-	15	×	120	=	18	82	×	120	=	98.4	3	×	120	=	3.6
8	60	-	×	-	=	-	5	×	60	=	3	93	×	60	=	55.8	2	×	60	=	1.2
9	60	-	×	-	=	-	5	×	60	=	3	93	×	60	=	55.8	2	×	60	=	1.2
			×		=			×		=			×		=			×		=	
			×		=			×		=			×		=			×		=	
			×		=			×		=			×		=			×		=	
			×		=			×		=			×		=			×		=	
			×		=			×		=			×		=			×		=	
Totals		22.2					224.8					303.2					29.8				

CALCULATED DST RECOVERY =

CHLORIDES MUD SYSTEM 54,000 PPM
CHLORIDES DST WATER 26,000 PPM
GRAVITY OF OIL

GAS 22.2
OIL 224.8
WTR 303.2
MUD 29.8
TOTAL FLUID 580'