NOMENCLATURE

b	=	Approximate Radius of Investigation	Feet
b^1	=	Approximate Radius of Investigation (Net Pay Zone h^1)	Feet
D.R.	=	Damage Ratio	——
El	=	Elevation	Feet
GD	=	B.T. Gauge Depth (From Surface Reference)	Feet
h	=	Interval Tested	Feet
h^1	=	Net Pay Thickness	Feet
K	=	Permeability	md
K^1	=	Permeability (From Net Pay Zone h^1)	md
m	=	Slope Extrapolated Pressure Plot (Psi^2/cycle Gas)	psi/cycle
OF^1	=	Maximum Indicated Flow Rate	MCF/D
OF^2	=	Minimum Indicated Flow Rate	MCF/D
OF^3	=	Theoretical Open Flow Potential with/Damage Removed Max.	MCF/D
OF^4	=	Theoretical Open Flow Potential with/Damage Removed Min.	MCF/D
P^S	=	Extrapolated Static Pressure	Psig.
P^F	=	Final Flow Pressure	Psig.
$P^{\circ T}$	=	Potentiometric Surface (Fresh Water*)	Feet
Q	=	Average Adjusted Production Rate During Test	bbls/day
Q^1	=	Theoretical Production w/Damage Removed	bbls/day
Q^g	=	Measured Gas Production Rate	MCF/D
R	=	Corrected Recovery	bbls
r^w	=	Radius of Well Bore	Feet
t	=	Flow Time	Minutes
t°	=	Total Flow Time	Minutes
T	=	Temperature Rankine	°R
Z	=	Compressibility Factor	——
u	=	Viscosity Gas or Liquid	CP
Log	=	Common Log	

* Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100° F.

WESTERN TESTERS

Home Office: Great Bend, Kansas

P. O. Box 793 SWift 3-7903

Company Hamilton Oil Company Lease & Well No. Steele #1

Elevation 2138 Kelly Bushings Formation Regan Ticket Number 7299

Date May 5,1966 Sec. 4 Twp. 6s Range 20w County Rooks State Kansas

Test Approved by Bill Iverson Western Representative Gerrell Veatch

---

Formation Test No. 1 O.K. X Misrun Interval Tested From 3616' to 3625' Total Depth 3625'

Size Main Hole 7 7/8 Rat Hole Conv. B.T. X Damaged Yes X No Conv. X B.T. Damaged Yes X No

Top Packer Depth 3612 Ft. Size 6 3/4 Packer Depth 3616 Ft. Size 6 3/4

Straddle Yes X No Conv. B.T. Damaged Yes No

Packer Depth Ft. Size

Tool Size 5½ OD Tool Jt. Size 4½ FH Anchor Length 9 Ft. Size 5½ OD

RECORDERS Depth 3609 Ft. Clock No. 6895 Depth 3619 Ft. Clock No. 8377

AP

Top Make Kuster Cap. 4150 No. 969 Inside ~~Outside~~ Bottom Make Kuster Cap. 4150 No. 2607 ~~Inside~~ Outside

Below Straddle: Depth Clock No. Inside Outside Depth Ft. Clock No. Inside Outside

Top Make Cap. No. Inside Outside Bottom Make Cap. No. Inside Outside

---

Time Set Packer 5:02 A M

Tool Open I.F.P. From 5:05 M to 5:15 M Hr. 10 Min. From (B) 24 P.S.I. To (C) 133 P.S.I.

Tool Closed I.C.I.P. From 5:15 M. to 5:45 M. Hr. 30 Min. (D) 1209 P.S.I.

Tool Open F.F.P. From 5:45 M. to 6:45 M. Hr. 60 Min. From (E) 149 P.S.I. To (F) 573 P.S.I.

Tool Closed F.C.I.P. From 6:45 M. to 7:15 M. Hr. 30 Min. (G) 1104 P.S.I.

Initial Hydrostatic Pressure (A) 1956 P.S.I. Final Hydrostatic Pressure (H) 1931 P.S.I.

SURFACE INFORMATION | Size Choke 3/8 In. | Max. Press. P.S.I. | Time | Description of Flow

_____ | _____ | _____ M. | _____

_____ | _____ | _____ M. | _____

_____ | _____ | _____ M. | _____

BLOW Strong throughout test. Bottom Choke Size 3/4 In.

Did Well Flow Yes X No Recovery Total Ft. 1200' salt water

_____ Mud

Reversed Out Yes X No Mud Type gel Viscosity 42 Weight 10.1 Maximum Temp. 115 °F

EXTRA EQUIPMENT: Dual Packers yes Safety Joint no Jars: Size Make Ser. No.

Type Circ. Sub plug Did Tool Plug? no Where? Did Packer Hold? yes

Length Drill Pipe 2786 ft. I.D. Drill Pipe 3.5 in Length Weight Pipe 810 ft. I.D. Weight Pipe 2.5 in. Length Drill Collars ft.

I. D. Drill Collars in. Length D.S.T. Tool 29 ft.

Remarks Inside recorder above packer.

WESTERN TESTING CO., INC.
Pressure Data

Date May 5, 1966 — Test Ticket No. 7299

Recorder No. 969 — Capacity 4150 — Location 3609 Ft.

Clock No. 6895 — Elevation 2138 Kelly Bushings — Well Temperature 115 °F

Point		Pressure		Time Given	Time Computed
A	Initial Hydrostatic Mud	1956 P.S.I.	Opened Tool	5:05 M	5:05
B	First Initial Flow Pressure	24 P.S.I.	First Flow Pressure	10 Mins.	10 Mins.
C	First Final Flow Pressure	133 P.S.I.	Initial Closed-in Pressure	30 Mins.	31 Mins.
D	Initial Closed-in Pressure	1209 P.S.I.	Second Flow Pressure	60 Mins.	57 Mins.
E	Second Initial Flow Pressure	149 P.S.I.	Final Closed-in Pressure	30 Mins.	29 Mins.
F	Second Final Flow Pressure	573 P.S.I.			
G	Final Closed-in Pressure	1104 P.S.I.			
H	Final Hydrostatic Mud	1931 P.S.I.			

PRESSURE BREAKDOWN

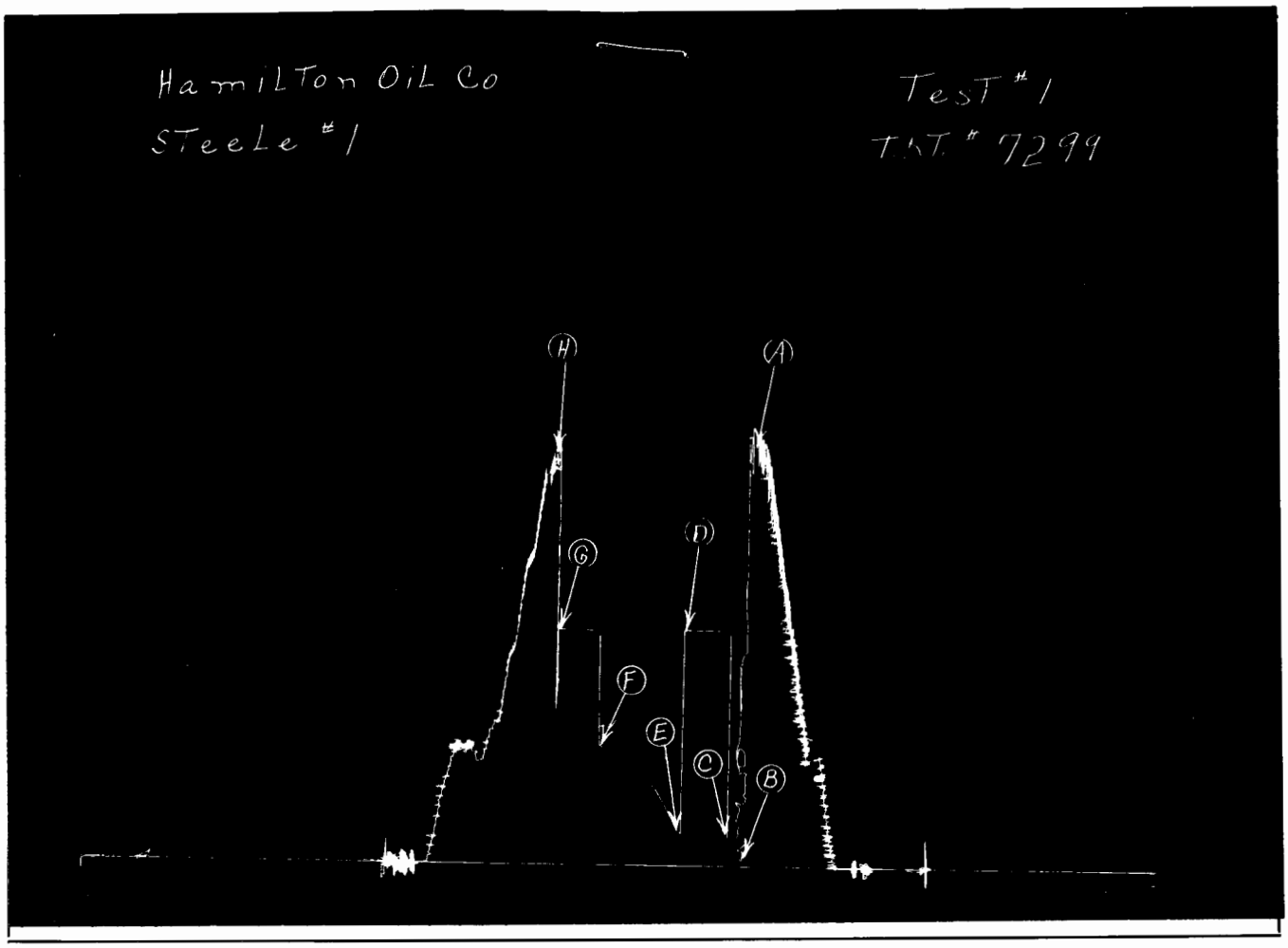
First Flow Press.
Breakdown: 2 Inc. of 5 mins. and a final inc. of 0 Min.

Initial Shut-In
Breakdown: 10 Inc. of 3 mins. and a final inc. of 1 Min.

Second Flow Pressure
Breakdown: 11 Inc. of 5 mins. and a final inc. of 2 Min.

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

Point	First Flow Press. Point Mins.	First Flow Press. Press.	Initial Shut-In Point Minutes	Initial Shut-In Press.	Second Flow Pressure Point Minutes	Second Flow Pressure Press.	Final Shut-In Point Minutes	Final Shut-In Press.
P 1	0	24	0	133	0	149	0	573
P 2	5	69	3	1029	5	204	3	1088
P 3	10	133	6	1207	10	266	6	1100
P 4			9	1209	15	327	9	1104
P 5			12	1209	20	372	12	1104
P 6			15	1209	25	403	15	1104
P 7			18	1209	30	430	18	1104
P 8			21	1209	35	456	21	1104
P 9			24	1209	40	487	24	1104
P10			27	1209	45	512	27	1104
P11			30	1209	50	536	29	1104
P12			31	1209	55	561		
P13					57	573		
P14								
P15								
P16								
P17								
P18								
P19								
P20								



This is an actual photograph of recorder chart.

POINT		PRESSURE	
(A)	Initial Hydrostatic Mud	1956	PSI
(B)	First Initial Flow Pressure	24	PSI
(C)	First Final Flow Pressure	133	PSI
(D)	Initial Closed-in Pressure	1209	PSI
(E)	Second Initial Flow Pressure	149	PSI
(F)	Second Final Flow Pressure	573	PSI
(G)	Final Closed-in Pressure	1104	PSI
(H)	Final Hydrostatic Mud	1931	PSI

COMPANY HAMILTON OIL CO. LEASE AND WELL NO. STEELE #1 SEC. 4 TWP. 6S RGE. 20W TEST NO. 1 DATE 5-5-66

WESTERN TESTERS

Home Office: Great Bend, Kansas

P. O. Box 793 SWift 3-7903

Company Hamilton Oil Company Lease & Well No. Steele #1

Elevation 2138 Kelly Bushings Formation Regan Ticket Number 8399

Date May 6,1966 Sec. 4 Twp. 6s Range 20w County Rooks State Kansas

Test Approved by Bill Iversen Western Representative Gerrell Veatch

---

Formation Test No. 2 O.K. X Misrun Interval Tested From 3610' to 3614' Total Depth 3639'

Size Main Hole 7 7/8 Rat Hole Conv. B.T. X Damaged X Yes No Conv. B.T. Damaged Yes No

Packer Depth 3610 Ft. Size 6 3/4 Packer Depth Ft. Size

Straddle X Yes No Conv. X B.T. Damaged Yes X No

Packer Depth 3614 Ft. Size 6 3/4

Tool Size 5½ OD Tool Jt. Size 4½ FH Anchor Length 4 Ft. Size 5½ OD 25' tail pipe

RECORDERS Depth 3604 Ft. Clock No. 8376 Depth 3607 Ft. Clock No. 109

AP Top Make Kuster Cap. 4150 No. 1558 Inside Outside Bottom Make Western Cap. 4000 No. 26 Inside Outside

Below Straddle: Depth 3626 Clock No. 6795 Inside Outside Depth Ft. Clock No. Inside Outside

Top Make Kuster Cap. 4200 No. 2608 Inside Outside Bottom Make Cap. No. Inside Outside

Time Set Packer 12:17 A.M.

Tool Open I.F.P. From 12:20 M to 12:30 M Hr. 10 Min. From (B) 12 P.S.I. To (C) 12 P.S.I.

Tool Closed I.C.I.P. From 12:30 M. to 1:00 M. Hr. 30 Min. (D) 781 P.S.I.

Tool Open F.F.P. From 1:00 M. to 1:30 M. Hr. 30 Min. From (E) 19 P.S.I. To (F) 21 P.S.I.

Tool Closed F.C.I.P. From 1:30 M. to 2:00 M. Hr. 30 Min. (G) 398 P.S.I.

Initial Hydrostatic Pressure (A) 1956 P.S.I. Final Hydrostatic Pressure (H) 1921 P.S.I.

SURFACE INFORMATION | Size Choke 3/8 In. | Max. Press. P.S.I. | Time | Description of Flow

		M.	
		M.	
		M.	

BLOW Weak for 16 minutes. Bottom Choke Size 3/4 In.

Did Well Flow Yes X No Recovery Total Ft. 10' watery mud with specks oil

Mud

Reversed Out Yes X No Mud Type gel. Viscosity 41 Weight 10.1 Maximum Temp. °F

EXTRA EQUIPMENT: Dual Packers no Safety Joint no Jars: Size Make Ser. No.

Type Circ. Sub plug Did Tool Plug? no Where? Did Packer Hold? yes

Length Drill Pipe 2779 ft. I.D. Drill Pipe 3.7 in Length Weight Pipe 810 ft. I.D. Weight Pipe 2.5 in. Length Drill Collars ft.

I. D. Drill Collars in. Length D.S.T. Tool 50 ft.

Remarks Recorders above packers.

WESTERN TESTING CO., INC.
Pressure Data

Date May 6,1966 | Test Ticket No. 8399

Recorder No. 1558 | Capacity 4150 | Location 3604 Ft.

Clock No. 8376 | Elevation 2138 Kelly Bushings | Well Temperature ___ °F

Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	1956 P.S.I.	Opened Tool	12:20A M	12:20
B First Initial Flow Pressure	12 P.S.I.	First Flow Pressure	10 Mins.	11 Mins.
C First Final Flow Pressure	12 P.S.I.	Initial Closed-in Pressure	30 Mins.	30 Mins.
D Initial Closed-in Pressure	781 P.S.I.	Second Flow Pressure	30 Mins.	30 Mins.
E Second Initial Flow Pressure	19 P.S.I.	Final Closed-in Pressure	30 Mins.	30 Mins.
F Second Final Flow Pressure	21 P.S.I.			
G Final Closed-in Pressure	398 P.S.I.			
H Final Hydrostatic Mud	1921 P.S.I.			

PRESSURE BREAKDOWN

First Flow Press.
Breakdown: 2 Inc. of 5 mins. and a final inc. of 1 Min.

Point Mins.	Press.
P 1 0	12
P 2 5	12
P 3 10	12
P 4 11	12
P 5	
P 6	
P 7	
P 8	
P 9	
P10	
P11	
P12	
P13	
P14	
P15	
P16	
P17	
P18	
P19	
P20	

Initial Shut-In
Breakdown: 10 Inc. of 3 mins. and a final inc. of 0 Min.

Point Minutes	Press.
0	12
3	105
6	326
9	516
12	612
15	672
18	708
21	735
24	756
27	772
30	781

Second Flow Pressure
Breakdown: 6 Inc. of 5 mins. and a final inc. of 0 Min.

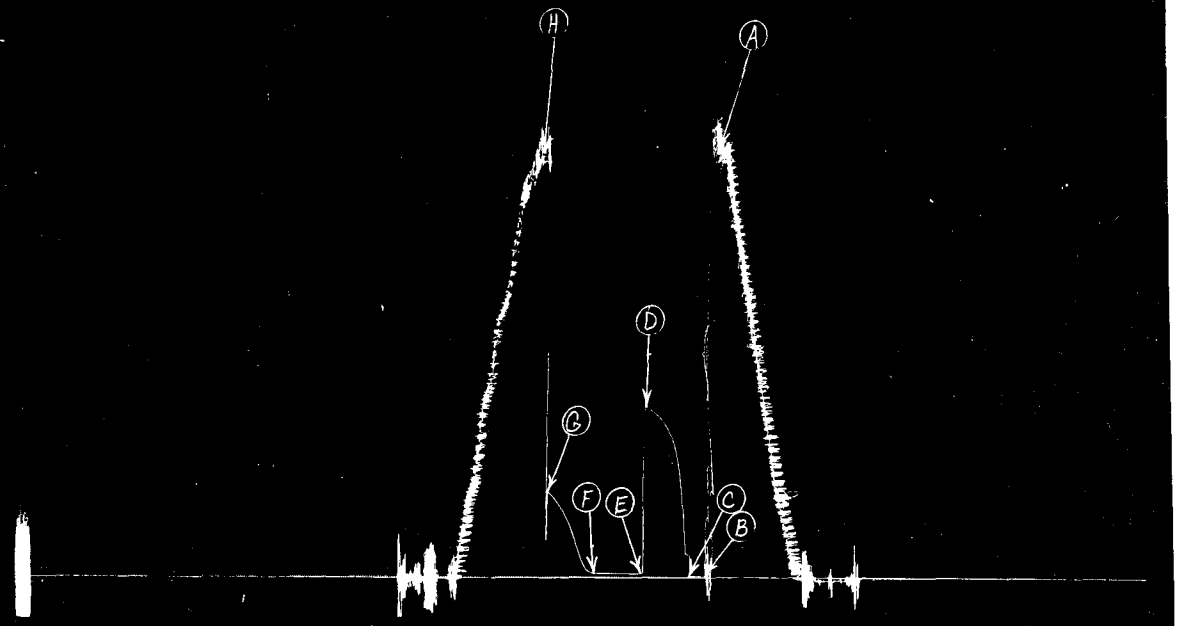
Point Minutes	Press.
0	19
5	19
10	19
15	20
20	20
25	21
30	21

Final Shut-In
Breakdown: 10 Inc. of 3 mins. and a final inc. of 0 Min.

Point Minutes	Press.
0	21
3	27
6	41
9	88
12	147
15	221
18	271
21	316
24	351
27	379
30	398

HAMILTON OIL CO.
STEELE #1

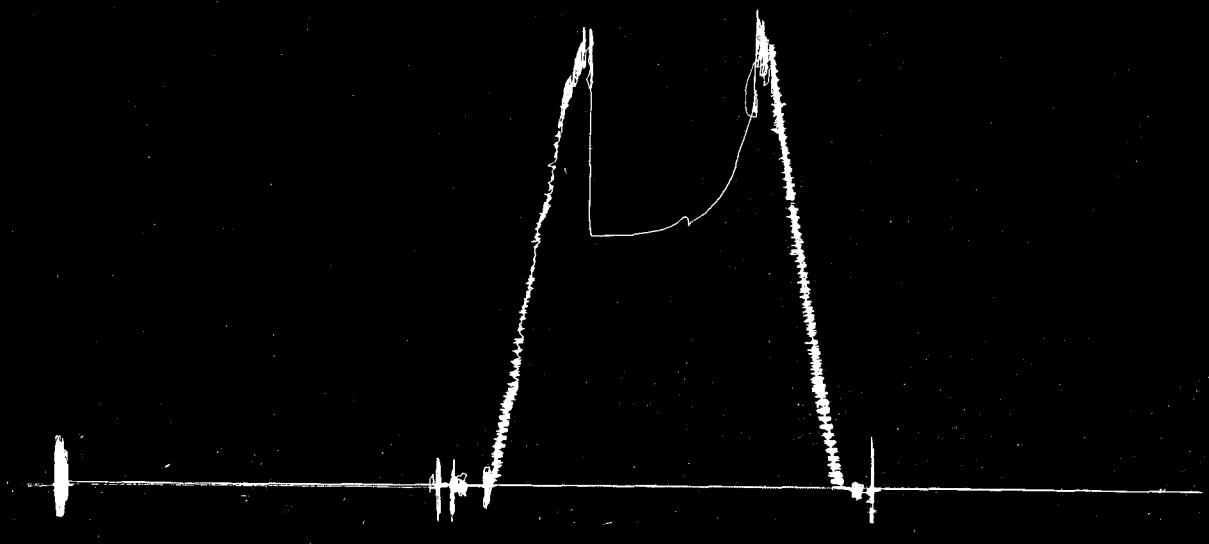
(STRADDLE) TEST # 2
TKT # 8399

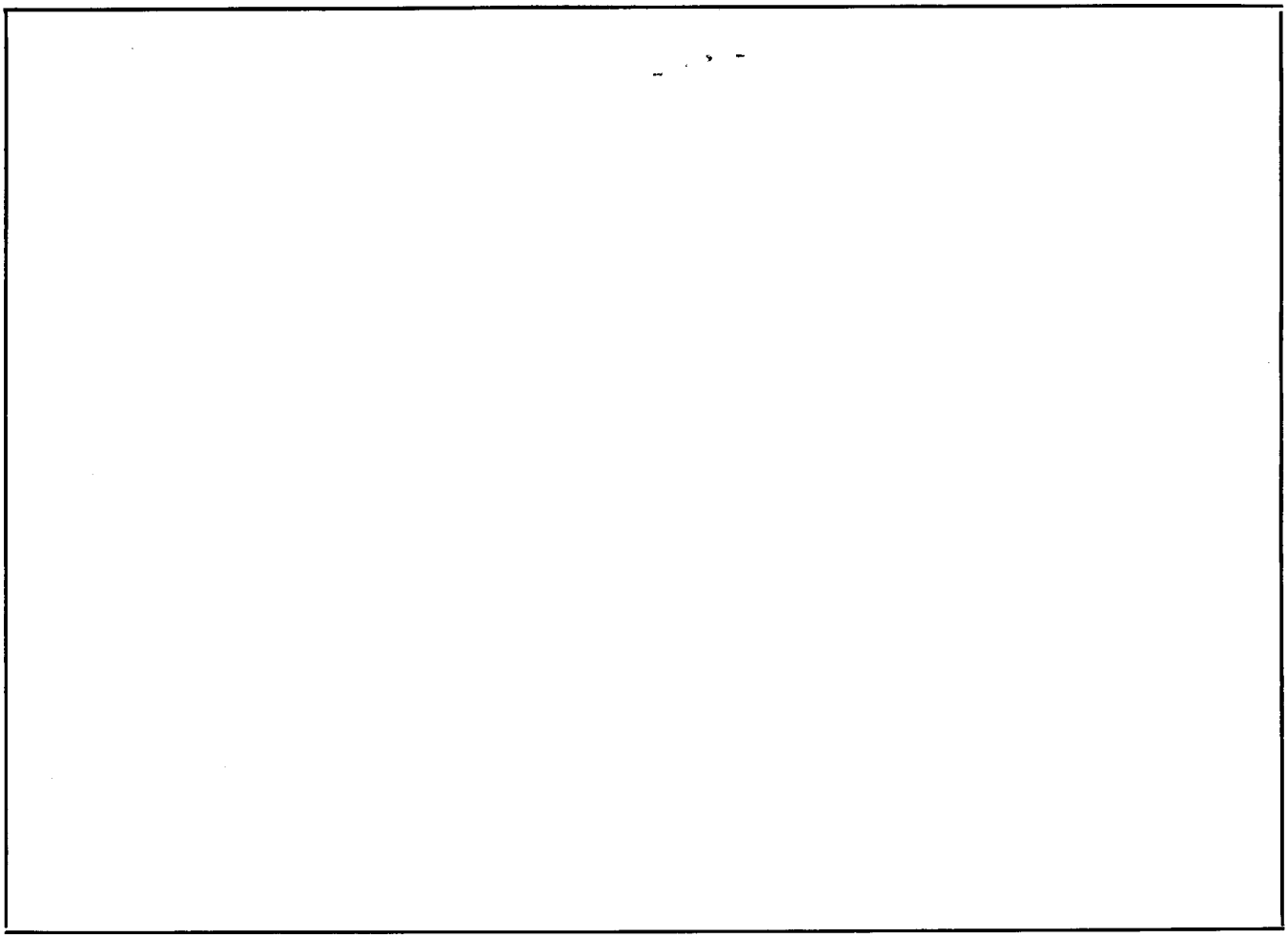


HAMILTON OIL CO.
STEELE #1

(STRADDLE) TEST # 2
TKT # 8399

BOTTOM HOLE
CHART





This is an actual photograph of recorder chart.

POINT		PRESSURE
(A)	Initial Hydrostatic Mud	1956 PSI
(B)	First Initial Flow Pressure	12 PSI
(C)	First Final Flow Pressure	12 PSI
(D)	Initial Closed-in Pressure	781 PSI
(E)	Second Initial Flow Pressure	19 PSI
(F)	Second Final Flow Pressure	21 PSI
(G)	Final Closed-in Pressure	398 PSI
(H)	Final Hydrostatic Mud	1921 PSI

COMPANY HAMILTON OIL COMPANY LEASE AND WELL NO. STEELE #1 SEC. 4 TWP. 6S RGE. 20W TEST NO. DATE