

SUPERIOR TESTERS
RR #1, Box 295B, Great Bend, Kansas

Date 6-15-85 Location SW SW SE 25-20-16 Elevation 2034⁶² County PAWNEE

Company Thunderbird Drilling, Inc Number of Copies 5

Address PO Box 18407 Wichita, KS 67230

Charts Mailed to PO Box 18407 Wichita, KS 67230

Invoice Mailed to PO Box 18407 Wichita, KS 67230

Lease CLARK "A" Well No. 1 Formation Tested _____ Test No. 1

Depth 3765 Tested from 3695 to 3765 Packer Size 6 3/4 Anchor Length 10'

Top Packer Depth 3690 ft. Bottom Packer Depth 3695 ft. Dual Packers yes

Tool Joint Size 4 1/2 x H Tool Size 5 1/2 OD Hole Size 7 7/8 Did Packer Hold yes

Drilling Contractor T Bird Drilling RIG #1

Length Drill Pipe 2912 I.D. Drill Pipe 3180 Tool Joint Size 4 1/2 R H

Length Weight Pipe 598 I.D. Weight Pipe 2175 Tool Joint Size 4 1/2 x H

Length Drill Collars NONE I.D. Drill Collars NONE Tool Joint Size NONE

Tool Open I.F.P. from 4:30 P m to 5:00 P m 30 min

Tool Closed I.C.I.P. from 5:00 P m to 5:30 P m 30 min

Tool Open F.F.P. from 5:30 P m to 6:00 P m 30 min

Tool Closed F.C.I.P. from 6:00 P m to 6:30 P m 30 min

Initial Hydrostatic Pressure [A] 1950 P.S.I. Final Hydrostatic Pressure [H] 1731 P.S.I. Maximum Temp 110 °F

Initial Blow WEAK surging Blow Buildin, 1/2 into water Died 22"

Final Blow WEAK surging Blow off Top of water Died 10"

Gas to Surface NONE Min. Oil to Surface NONE Min. Mut Weight 9.9 Viscosity 42

Gas Guaged NONE

from [B]	<u>109</u>	P.S.I. to [C]	<u>192</u>	P.S.I.
[D]	<u>1110</u>			P.S.I.
from [E]	<u>128</u>	P.S.I. to [F]	<u>128</u>	P.S.I.
[G]	<u>-1009</u>			P.S.I.

Recovery 20' Drilling mud oil spots on top of Tool

Remarks PLUG in Flow!

Extra Equipment-Jars NONE Safety Joint NONE Extra Packer NONE Straddle NONE Hook Wall NONE

Top Recorder No. 5463 Clock no. 23937 Depth 3759 Clr. Sub _____ Sampler NONE

Bottom Recorder No. 4333 Clock No. 9096 Depth 3762 Chlorides - pils 71000 D.S.T. 73000

Price of Job _____

Tool Operator PAT STEVENSON

Approved By _____

SUPERIOR TESTERS, INC. SHALL NOT BE LIABLE FOR DAMAGE OF ANY KIND TO THE PROPERTY OR PERSONEL OF THE ONE FOR WHOM A TEST IS MADE, OF FOR ANY LOSS SUFFERED OR SUSTAINED, DIRECTLY OR INDIRECTLY, THROUGH THE USE OF ITS EQUIPMENT, OR ITS STATEMENTS OR OPINION CONCERNING THE RESULTS OF ANY TEST. TOOLS LOST OR DAMAGED IN THE HOLE SHALL BE PAID FOR AT COST BY THE PARTY FOR WHOM THE TEST IS MADE.

Ticket N^o 8735

SUPERIOR TESTERS ENTERPRISES, INC.

WELL IDENTIFICATION DATA

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
ADDRESS : BOX 18407, WICHITA LOCATION : 25-20-16
STATE & COUNTY : KANSAS, PAWNEE FIELD :
ELEV. (GR) : 2034 (KB) : TEST DATE : 6-15-85

EQUIPMENT AND HOLE DATA

FORMATION TESTED :	DRILL PIPE LENGTH(ft) : 2912
TEST INT. KB : 3695 to 3765	DRILL PIPE O.D.(in) : 3.82
ANCHOR LENGTH(ft) : 70	WEIGHT PIPE LENGTH(ft) : 598
TYPE OF TEST : Conventional	WEIGHT PIPE ID : 2.75
TOTAL DEPTH(ft-kb) : 3765	DRILL COLLAR LENGTH(ft) : NONE
MAIN HOLE SIZE(in) : 7 7/8	DRILL COLLAR I.D.(in) : NONE
MUD WEIGHT : 9.9	TOP PACKER DEPTH(kb) : 3690
MUD VISCOSITY : 42	BOTTOM PACKER DEPTH(kb) : 3695
MUD CHLORIDES : 71000	DUAL PACKERS : YES
SURFACE CHOKE : 3/4	PACKER SIZE(in) : 6 3/4
BOTTOM CHOKE(in) : 3/4	PACKER HOLD : Yes
TOOL SIZE(O.D.) : 5 1/2	TOOL PLUG : No
TOOL JOINT SIZE(F.H.) : 4 1/2	REVERSED OUT : No
RESERVOIR TEMPERATURE(F) : 110	TEST TICKET NUMBER : 8735

EXTRA EQUIPMENT :

ELEMENT SERIAL NO. : 5463
RANGE : 0 - 3650 CLOCK RANGE : 12 HOURS
CAL. EQU. : 922.07 * Defl. - 2.47

SURFACE BLOW

1st Opening : WEAK SURGING-BUILDING 1/2 IN. INTO WATER-DIED 22MIN
2nd Opening : WEAK SURGING-OFF TOP OF WATER-DIED 10 MIN.

RECOVERY

Recovered 70 feet of DRILLING MUD -OIL SPOTS ON TOP OF TOOL

REMARKS :

PLUGGING IN FLOWS

WITNESSED BY : TOOL OPERATOR : PAT STEVENSON

INTERPRETATION BY : SUPERIOR TESTERS ENTERPRISES, INC.

SUPERIOR TESTERS ENTERPRISES, INC.

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
 DATE OF TEST : 6-15-85 LOCATION : 25-20-16
 DEPTH : 3759.0 SERIAL NO. : 5463

COMMENTS	TIME min	DEFL in	PRESSURE PSIG		
			CALC	CORR	CORRECTED
TEST NO.:1					
Depth : 3759.0 ft-kb					
-1ST HYDROSTATIC	0.0	2.195	2021.48	-2.03	2019.44
-16:30 1ST FLOW	0.0	.130	117.40	1.86	119.27
- 16:31	1.0	.102	91.58	1.99	93.58
- 16:32	2.0	.136	122.93	1.84	124.77
- 16:33	3.0	.277	252.95	1.18	254.13
- 16:35	5.0	.162	146.91	1.72	148.62
- 16:37	7.0	.307	280.61	1.04	281.65
- 16:39	9.0	.303	276.92	1.06	277.98
- 16:40	10.0	.417	382.04	.53	382.57
- 16:40	10.0	.181	164.43	1.63	166.06
- 16:43	13.0	.230	209.61	1.40	211.01
- 16:43	13.0	.180	163.51	1.63	165.14
- 16:49	19.0	.672	617.16	-.65	616.51
- 16:50	20.0	.196	178.26	1.56	179.82
- 16:59	29.0	1.010	928.82	-2.22	926.61
- 17:00	30.0	.219	199.47	1.45	200.92
-17:00 END FLOW	0.0	.219	199.47	1.45	200.92
- 17:03	3.0	.747	686.32	-1.00	685.32
- 17:06	6.0	.996	915.92	-2.15	913.76
- 17:09	9.0	1.075	988.76	-2.52	986.24
- 17:12	12.0	1.123	1033.02	-2.58	1030.44
- 17:15	15.0	1.152	1059.76	-2.56	1057.20
- 17:18	18.0	1.173	1079.12	-2.55	1076.57
- 17:21	21.0	1.187	1092.03	-2.55	1089.48
- 17:24	24.0	1.200	1104.02	-2.54	1101.48
- 17:27	27.0	1.210	1113.24	-2.54	1110.70
- 17:30	30.0	1.217	1119.69	-2.53	1117.16
-17:30 1ST SHUT-IN	0.0	1.217	1119.69	-2.53	1117.16
-17:30 2ND FLOW	0.0	.159	144.14	1.73	145.87
- 17:31	1.0	.250	228.05	1.31	229.36
- 17:32	2.0	.153	138.61	1.76	140.37
- 17:39	9.0	.761	699.23	-1.06	698.17
- 17:40	10.0	.639	586.74	-.50	586.24
- 17:41	11.0	.816	749.94	-1.32	748.62
- 17:41	11.0	.242	220.67	1.34	222.02
- 17:47	17.0	.879	808.03	-1.61	806.42
- 17:47	17.0	.332	303.66	.93	304.59
- 17:55	25.0	1.035	951.88	-2.33	949.54
- 17:57	27.0	.151	136.77	1.77	138.53
- 18:00	30.0	.139	125.70	1.82	127.52

SUPERIOR TESTERS ENTERPRISES, INC.

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
 DATE OF TEST : 6-15-85 LOCATION : 25-20-16
 DEPTH : 3759.0 SERIAL NO. : 5463

COMMENTS	TIME min	DEFL in	PRESSURE PSIG		
			CALC	CORR	CORRECTED
TEST NO.: 1					
-18:00 END FLOW	0.0	.139	125.70	1.82	127.52
- 18:03	3.0	.186	169.04	1.60	170.64
- 18:06	6.0	.315	287.99	1.01	288.99
- 18:08	8.0	.505	463.18	.12	463.30
- 18:12	12.0	.763	701.07	-1.07	700.00
- 18:15	15.0	.904	831.08	-1.73	829.36
- 18:18	18.0	.987	907.62	-2.11	905.50
- 18:21	21.0	1.035	951.88	-2.33	949.54
- 18:24	24.0	1.071	985.07	-2.50	982.57
- 18:27	27.0	1.093	1005.36	-2.59	1002.77
- 18:29	29.0	1.105	1016.42	-2.58	1013.84
-18:29 2ND SHUT-IN	0.0	1.105	1016.42	-2.58	1013.84
-2ND HYDROSTATIC	0.0	2.163	1991.97	-2.12	1989.85

SUPERIOR TESTERS ENTERPRISES, INC.

DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
DATE OF TEST : 6-15-85 LOCATION : 25-20-16

RECOVERY INFORMATION

LIQUID RECOVERY

Total Fluid Recovered : 70

Recovered 70 feet of DRILLING MUD w/OIL SPOTS ON TOP OF TOOL

GAS RECOVERY

Measured With :

Riser :

Time (min.)

(

)

Reading

Surface Choke (in.)

Cubic feet/day

FLUID PROPERTIES

Viscosity (cp)

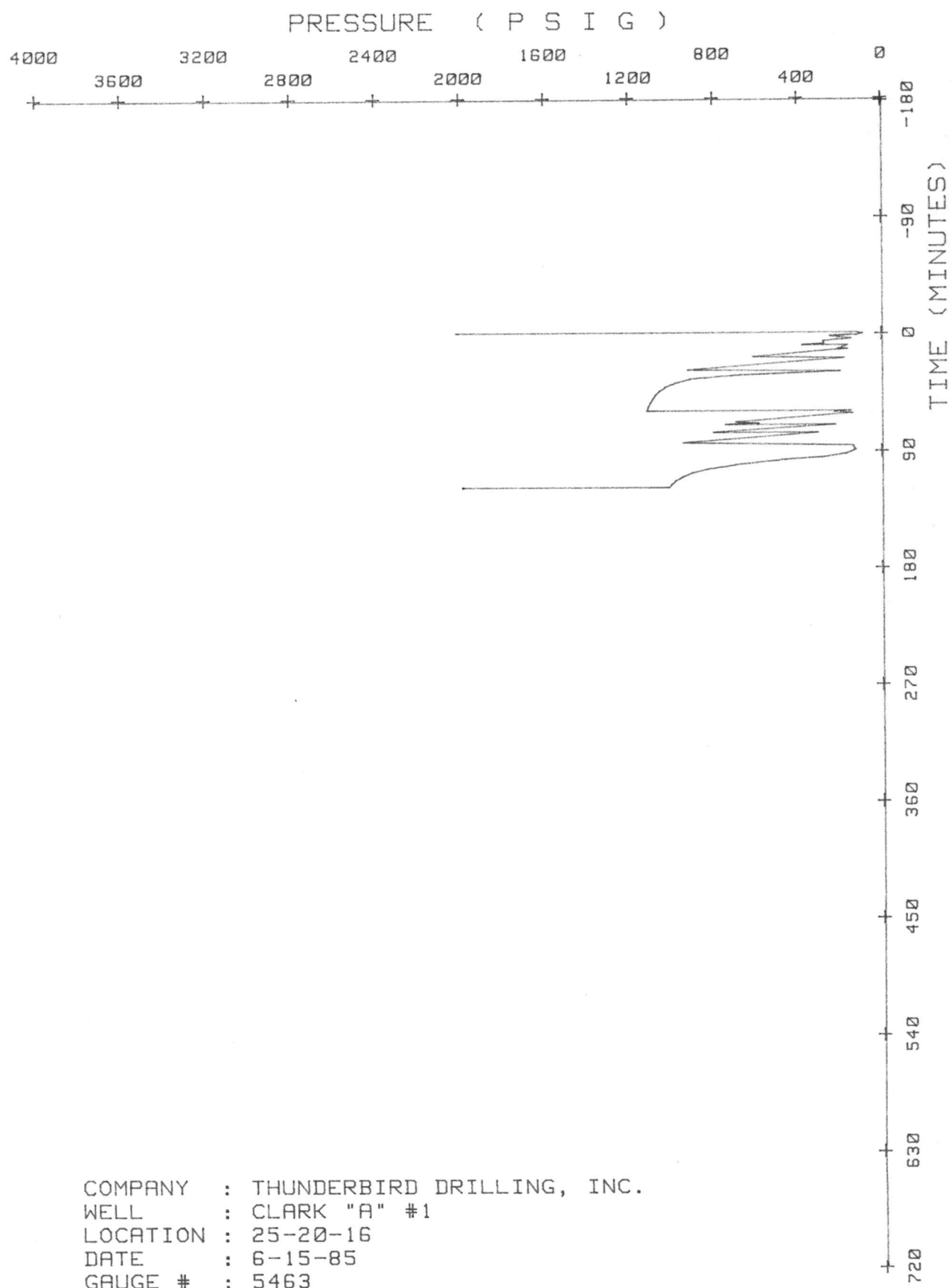
Compressibility (psi-1)

Pore Space Saturation

Oil

Gas

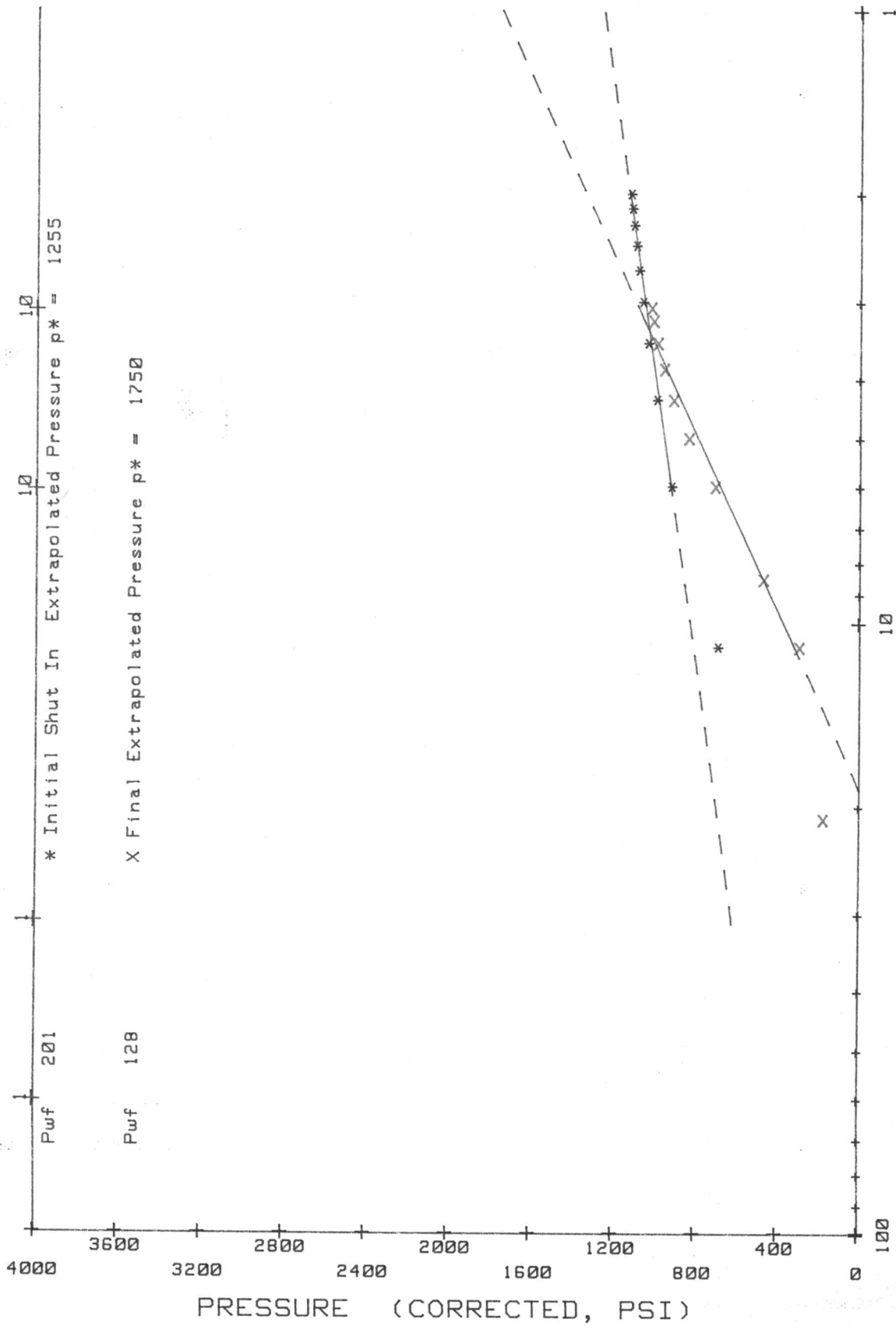
Water



LOCATION : 25-20-16

DATE : 6-15-85

GAUGE # : 5463



PRESSURE (CORRECTED, PSI)

TIME (MINUTES) : $(T+dt)/dt$ - (Semilog scale)

SUPERIOR TESTERS ENTERPRISES, INC.

HORNER ANALYSIS

COMPANY : THUNDERBIRD DRILLING, INC.
 WELL NAME : CLARK "A" #1
 LOCATION : 25-20-16
 STATE & COUNTY : KANSAS, PAWNEE
 DATE OF TEST : 6-15-85
 TEST INT. KB : 3695 to 3765
 TOTAL INTERVAL (ft) K.B. : 70.00
 ELEV. (GR) : 2034 (KB) :
 FIELD :

ELEMENT SERIAL NO. : 5463
 LATEST CALIBRATION :

COMMENTS	TIME min	(T+dt)/dt min	----- PRESSURES CORR PSIG -----
Refer. depth : 3759.0 ft-kb			
-17:00 END FLOW	0.00	0.00	200.92
	3.00	11.00	685.32
	6.00	6.00	913.76
	9.00	4.33	986.24
	12.00	3.50	1030.28
	15.00	3.00	1056.88
	18.00	2.67	1076.15
	21.00	2.43	1088.99
	24.00	2.25	1100.92
	27.00	2.11	1110.09
	30.00	2.00	1116.51
-17:30 1ST SHUT-IN	0.00	0.00	1116.51

INTERPRETATION BY : SUPERIOR TESTERS INC.

SUPERIOR TESTERS ENTERPRISES, INC.

DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
DATE OF TEST : 6-15-85 LOCATION : 25-20-16
DST. NO : 1 SHUT-IN PERIOD : 1

INTERPRETIVE DATA (OIL)

EXTRAPOLATED RESERVOIR PRESSURE (psi):	1255.00
Slope of Build-up Curve (psi/log cycle):	428.55
Effective Producing Time (min):	30.00

INTERPRETATION BY : SUPERIOR TESTERS INC.

SUPERIOR TESTERS ENTERPRISES, INC.

HORNER ANALYSIS

COMPANY : THUNDERBIRD DRILLING, INC.
 WELL NAME : CLARK "A" #1
 LOCATION : 25-20-16
 STATE & COUNTY : KANSAS, PAWNEE
 DATE OF TEST : 6-15-85
 TEST INT. KB : 3695 to 3765
 TOTAL INTERVAL (ft) K.B. : 70.00
 ELEV. (GR) : 2034 (KB) :
 FIELD :

ELEMENT SERIAL NO. : 5463
 LATEST CALIBRATION :

COMMENTS	TIME min	(T+dt)/dt min	----- PRESSURES CORR PSIG -----
Refer. depth :	3759.0 ft-kb		
-18:00 END FLOW	0.00	0.00	127.52
	3.00	21.00	170.64
	6.00	11.00	288.99
	8.00	8.50	463.30
	12.00	6.00	700.00
	15.00	5.00	829.36
	18.00	4.33	905.50
	21.00	3.86	949.54
	24.00	3.50	982.57
	27.00	3.22	1002.75
	29.00	3.07	1013.76
-18:29 2ND SHUT-IN	0.00	0.00	1013.76

INTERPRETATION BY : SUPERIOR TESTERS INC.

SUPERIOR TESTERS ENTERPRISES, INC.

DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
DATE OF TEST : 6-15-85 LOCATION : 25-20-16
DST. NO : 1 SHUT-IN PERIOD : 2

INTERPRETIVE DATA (OIL)

EXTRAPOLATED RESERVOIR PRESSURE (psi):	1750.00
Slope of Build-up Curve (psi/log cycle):	1377.28
Effective Producing Time (min):	60.00

INTERPRETATION BY : SUPERIOR TESTERS INC.

DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
 DATE OF TEST : 6-15-85 LOCATION : 25-20-16
 DST. NO : 1 SHUT-IN PERIOD : 2

INTERPRETIVE DATA (OIL)

TRANSMISSIBILITY

Oil (md.ft/cp): 0.00
 Gas (md.ft/cp): 0.00

EFFECTIVE PERMEABILITY

Oil (md): 0.00
 Gas (md): 0.00

TOTAL MOBILITY (md/cp): 0.00

TOTAL COMPRESSIBILITY (psi⁻¹): 0.00E+00

ESTIMATED DAMAGE RATIO:27

CALCULATED DAMAGE RATIO: 0.00

Reservoir Temperature (F): 110.00

Formation Porosity : 0.00

Formation Thickness (ft): 10.00

Wellbore Radius (in): 3.94

Reservoir Compressibility (psi⁻¹): 0.00E+00

Calculated Skin Factor : 0.00

PRODUCTION WITH DAMAGE REMOVED (bbl/D): 0.00

PRODUCTIVITY INDEX (bbl/psi): 0.00

Final Flow Pressure (psi): 127.52

APPROXIMATE RADIUS OF INVESTIGATION (ft): 0.00

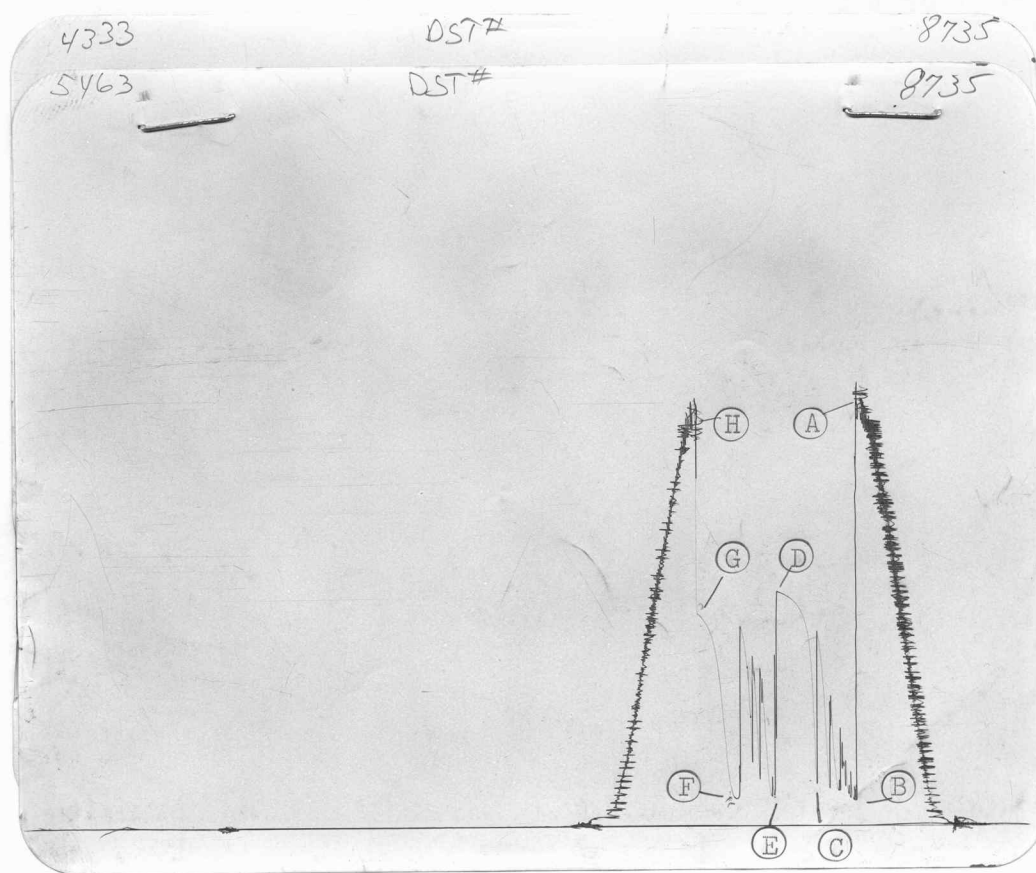
Total Flowing Time (min): 60.00

EXTRAPOLATED RESERVOIR PRESSURE (psi): 1750.00

Slope of Build-up Curve (psi/log cycle): 1377.28

Effective Producing Time (min): 60.00

INTERPRETATION BY : SUPERIOR TESTERS INC.



POINT	PRESSURE		
	FIELD READING	OFFICE READING	
(A) Initial Hydrostatic Mud	1950	2019	P.S.I.
(B) First Initial Flow Pressure	109	119	P.S.I.
(C) First Final Flow Pressure	192	200	P.S.I.
(D) Initial Closed-in Pressure	1110	1117	P.S.I.
(E) Second Initial Flow Pressure	128	145	P.S.I.
(F) Second Final Flow Pressure	128	127	P.S.I.
(G) Final Closed-in Pressure	1009	1013	P.S.I.
(H) Final Hydrostatic Mud	1931	1989	P.S.I.

SUPERIOR TESTERS
RR #1, Box 295B, Great Bend, Kansas

Date 6-16-85 Location SW SWSE-25-20-16 Elevation 2034' County Pawnee
Company Thunderbird Drilling Inc. Number of Copies 5
Address PO Box 18407 Wichita KS 67230
Charts Mailed to PO Box 18407 Wichita KS 67230
Invoice Mailed to PO Box 18407 Wichita KS 67230
Lease CLARK Well No. 1 Formation Tested Arb Test No. 2
Depth 3780 Tested from 3757 to 3780 Packer Size 6 3/4 Anchor Length 27
Top Packer Depth 3752 ft. Bottom Packer Depth 3757 ft. Dual Packers yes
Tool Joint Size 4 1/2 XH Tool Size Stop Hole Size 7 7/8 Did Packer Hold yes
Drilling Contractor T Bird Drilling
Length Drill Pipe 2942 I.D. Drill Pipe 380 Tool Joint Size 4 1/2 FN
Length Weight Pipe 5.98 I.D. Weight Pipe 275 Tool Joint Size 4 1/2 XH
Length Drill Collars none I.D. Drill Collars none Tool Joint Size none

Tool Open I.F.P. from 1715 A m to 745 A m 30 min
Tool Closed I.C.I.P. from 2:45 A m to 830 m 45 min
Tool Open F.F.P. from 830 m to 930 m 60 min
Tool Closed F.C.I.P. from 930 m to 1015 m 45 min

from [B]	<u>109</u>	P.S.I. to [C]	<u>117</u>	P.S.I.
[D]	<u>917</u>			P.S.I.
from [E]	<u>128</u>	P.S.I. to [F]	<u>155</u>	P.S.I.
[G]	<u>862</u>			P.S.I.

Initial Hydrostatic Pressure [A] 2061 P.S.I. Final Hydrostatic Pressure [H] 2024 P.S.I. Maximum Temp 101 °F
Initial Blow STRONG Blow off Bottom of Bucket 64
Final Blow STRONG Blow off Bottom of Bucket 10 1/4 slightly decrease
Gas to Surface 7740 Min. Oil to Surface _____ Min. Mut Weight 10 Viscosity 46
Gas Guaged _____

Recovery 360
580 Heavy oil cut gasey mud

Remarks _____

Extra Equipment-Jars None Safety Joint None Extra Packer None Straddle None Hook Wall None
Top Recorder No. 5463 Clock no. 23937 Depth 3774 Clr. Sub _____ Sampler None
Bottom Recorder No. 9332 Clock No. 9096 Depth 3777 Chlorides - pils 21000 D.S.T. 21090
Price of Job _____
Tool Operator Pat Slone
Approved By _____

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Ticket No 8736

Superior Testers, Inc.

Derby, Kansas (316) 788-2631

Great Bend, Kansas (316) 792-6902

Hays, Kansas (913) 628-3209

DRILL STEM TEST RECOVERY ANALYSIS

Company Thunderbird Drilling Sec. 25 Twp. 20 Rge. 16
 Lease CHARK County PAWNEE State KY D.S.T.# 2
 Visual D.S.T. _____
 Recovery _____

CENTRIFUGE PERCENTAGE ANALYSIS

Sample #	Feet of FLUID	Percent of GAS	Percent of OIL	Percent of WATER	Percent of MUD
1	60	23	2	0	75
2	60	12	30	8	50
3	120	15	55	8	22
4	60	9	65	6	20
5	60	7	28	13	50

CALCULATED FLUID RECOVERY FROM PERCENTAGES

(Formula for Calculation)

Percent of Individual Fluid x Total Footage Represented in Sample

SAMPLE #	TOTAL FOOT-AGE	GAS				Feet	OIL				Feet	WATER				Feet	MUD				Feet
		%	x	Total	=		%	x	Total	=		%	x	Total	=		%	x	Total	=	
1	60	23	x	60	=	13.8	2	x	60	=	12	0	x	60	=	0	75	x	60	=	45
2	60	12	x	60	=	7.2	30	x	60	=	18	8	x	60	=	4.8	50	x	60	=	30
3	120	15	x	120	=	18	55	x	120	=	66	8	x	120	=	9.6	22	x	120	=	26.4
4	60	9	x	60	=	5.4	65	x	60	=	39	6	x	60	=	3.6	20	x	60	=	12
5	60	7	x	60	=	5.4	28	x	60	=	16.8	13	x	60	=	7.8	50	x	60	=	30
			x		=			x		=			x		=			x		=	
			x		=			x		=			x		=			x		=	
			x		=			x		=			x		=			x		=	
			x		=			x		=			x		=			x		=	
			x		=			x		=			x		=			x		=	
			x		=			x		=			x		=			x		=	
			x		=			x		=			x		=			x		=	
TOTALS		49.8					142					25.8					143.4				

Calculated D.S.T. Recovery =

Chlorides Mud System _____
 Chlorides D.S.T. Water _____
 Gravity of Oil _____

Gas _____ Feet
 Oil _____ Feet
 Wtr. _____ Feet
 Mud _____ Feet
 Total Fluid 366 Feet

SUPERIOR TESTERS ENTERPRISES, INC.

WELL IDENTIFICATION DATA

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
ADDRESS : BOX 18407, WICHITA LOCATION : 25-20-16
STATE & COUNTY : KANSAS, PAWNEE FIELD :
ELEV.(GR) : 2034 (KB) : TEST DATE : 6-16-85

EQUIPMENT AND HOLE DATA

FORMATION TESTED : ARBUCKLE	DRILL PIPE LENGTH(ft) : 2942
TEST INT. KB : 3757 to 3780	DRILL PIPE O.D.(in) : 3.82
ANCHOR LENGTH(ft) : 27	WEIGHT PIPE LENGTH(ft) : 598
TYPE OF TEST : Conventional	WEIGHT PIPE ID : 2.75
TOTAL DEPTH(ft-kb) : 3780	DRILL COLLAR LENGTH(ft) : NONE
MAIN HOLE SIZE(in) : 7 7/8	DRILL COLLAR I.D.(in) : NONE
MUD WEIGHT : 10.0	TOP PACKER DEPTH(kb) : 3752
MUD VISCOSITY : 46	BOTTOM PACKER DEPTH(kb) : 3757
MUD CHLORIDES : 71000	DUAL PACKERS : YES
SURFACE CHOKE : 3/4	PACKER SIZE(in) : 6 3/4
BOTTOM CHOKE(in) : 3/4	PACKER HOLD : Yes
TOOL SIZE(O.D.) : 5 1/2	TOOL PLUG : No
TOOL JOINT SIZE(F.H.) : 4 1/2	REVERSED OUT : No
RESERVOIR TEMPERATURE(F) : 101	TEST TICKET NUMBER : 8736

EXTRA EQUIPMENT :

ELEMENT SERIAL NO. : 5463
RANGE : 0 - 3650 CLOCK RANGE : 12 HOURS
CAL. EQU. : 922.07 * Defl. - 2.47

SURFACE BLOW

1st Opening : STRONG OFF BOTTOM OF BUCKET IN 6 MIN.
2nd Opening : STRONG OFF BOTTOM OF BUCKET 10MIN-SLIGHT DECREASE

RECOVERY

Recovered 360 feet of HEAVY OIL CUT GASSY MUD

REMARKS :

0

WITNESSED BY : TOOL OPERATOR : PAT STEVENSON

INTERPRETATION BY : SUPERIOR TESTERS ENTERPRISES, INC.

SUPERIOR TESTERS ENTERPRISES, INC.

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
 DATE OF TEST : 6-16-85 LOCATION : 25-20-16
 DEPTH : 3774.0 SERIAL NO. : 5463

COMMENTS	TIME min	DEFL in	----- CALC	PRESSURE PSIG CORR	----- CORRECTED
TEST NO.:2					
Depth : 3774.0 ft-kb					
-1ST HYDROSTATIC	0.0	2.186	2013.18	-2.07	2011.11
-07:15 1ST FLOW	0.0	.179	162.58	1.64	164.22
- 7:18	3.0	.179	162.58	1.64	164.22
- 7:19	4.0	.168	152.44	1.69	154.13
- 7:23	8.0	.128	115.56	1.87	117.43
- 7:28	13.0	.123	110.95	1.90	112.84
- 7:32	17.0	.123	110.95	1.90	112.84
- 7:36	21.0	.128	115.56	1.87	117.43
- 7:40	25.0	.149	134.92	1.78	136.70
- 7:41	26.0	.155	140.45	1.75	142.20
-07:41 END FLOW	0.0	.155	140.45	1.75	142.20
- 7:44	3.0	.196	178.26	1.56	179.82
- 7:47	6.0	.264	240.96	1.24	242.20
- 7:50	9.0	.327	299.05	.95	300.00
- 7:52	11.0	.380	347.92	.70	348.62
- 7:55	14.0	.442	405.09	.42	405.50
- 7:58	17.0	.510	467.79	.10	467.89
- 8:01	20.0	.584	536.02	-.24	535.78
- 8:03	22.0	.665	610.71	-.62	610.09
- 8:06	25.0	.709	651.28	-.82	650.46
- 8:09	28.0	.827	760.09	-1.37	758.72
- 8:12	31.0	.896	823.71	-1.69	822.02
- 8:15	34.0	.954	877.19	-1.96	875.23
- 8:17	36.0	.993	913.15	-2.14	911.01
- 8:20	39.0	1.016	934.36	-2.25	932.11
-08:20 1ST SHUT-IN	0.0	1.016	934.36	-2.25	932.11
-08:20 2ND FLOW	0.0	.176	159.82	1.65	161.47
- 8:24	4.0	.159	144.14	1.73	145.87
- 8:29	9.0	.156	141.38	1.74	143.12
- 8:33	13.0	.156	141.38	1.74	143.12
- 8:37	17.0	.157	142.30	1.74	144.04
- 8:41	21.0	.158	143.22	1.73	144.95
- 8:45	25.0	.159	144.14	1.73	145.87
- 8:49	29.0	.162	146.91	1.72	148.62
- 8:54	34.0	.164	148.75	1.71	150.46
- 8:58	38.0	.166	150.60	1.70	152.29
- 9:02	42.0	.167	151.52	1.69	153.21
- 9:06	46.0	.169	153.36	1.68	155.05
- 9:10	50.0	.173	157.05	1.66	158.72
- 9:15	55.0	.174	157.97	1.66	159.63

SUPERIOR TESTERS ENTERPRISES, INC.

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
 DATE OF TEST : 6-16-85 LOCATION : 25-20-16
 DEPTH : 3774.0 SERIAL NO. : 5463

COMMENTS	TIME min	DEFL in	----- CALC	PRESSURE PSIG CORR	----- CORRECTED
TEST NO.:2					
-09:16 END FLOW	0.0	.174	157.97	1.66	159.63
- 9:17	1.0	.208	189.32	1.50	190.83
- 9:22	6.0	.229	208.69	1.40	210.09
- 9:24	8.0	.272	248.34	1.20	249.54
- 9:27	11.0	.310	283.38	1.03	284.40
- 9:30	14.0	.348	318.41	.85	319.27
- 9:33	17.0	.380	347.92	.70	348.62
- 9:36	20.0	.410	375.58	.56	376.15
- 9:38	22.0	.431	394.95	.47	395.41
- 9:41	25.0	.462	423.53	.32	423.85
- 9:44	28.0	.516	473.32	.07	473.39
- 9:47	31.0	.567	520.35	-.16	520.18
- 9:50	34.0	.620	569.22	-.41	568.81
- 9:52	36.0	.682	626.39	-.70	625.69
- 9:55	39.0	.730	670.64	-.92	669.72
- 9:58	42.0	.781	717.67	-1.16	716.51
- 10:01	45.0	.809	743.49	-1.29	742.20
- 10:04	48.0	.853	784.06	-1.49	782.57
- 10:06	50.0	.886	814.49	-1.64	812.84
- 10:09	53.0	.909	835.70	-1.75	833.94
- 10:12	56.0	.928	853.21	-1.84	851.38
- 10:15	59.0	.945	868.89	-1.92	866.97
- 9:16	0.0	.945	868.89	-1.92	866.97
- 9:16	0.0	.945	868.89	-1.92	866.97
-10:15 2ND SHUT-IN	0.0	.945	868.89	-1.92	866.97
-2ND HYDROSTATIC	0.0	2.153	1982.75	-2.12	1980.63

SUPERIOR TESTERS ENTERPRISES, INC.

DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
DATE OF TEST : 6-16-85 LOCATION : 25-20-16

RECOVERY INFORMATION

LIQUID RECOVERY

Total Fluid Recovered : 360

Recovered 360 feet of HEAVY OIL CUT GASSY MUD

GAS RECOVERY	Measured With :		Riser :
Time (min.)	(	)	
	Reading	Surface Choke (in.)	Cubic feet/day

FLUID PROPERTIES

	Viscosity (cp)	Compressibility (psi-1)	Pore Space Saturation
Oil	.8	7.7E-6	.39
Gas			.14
Water	.45	3.1E-6	.07

CALCULATED RECOVERY ANALYSIS

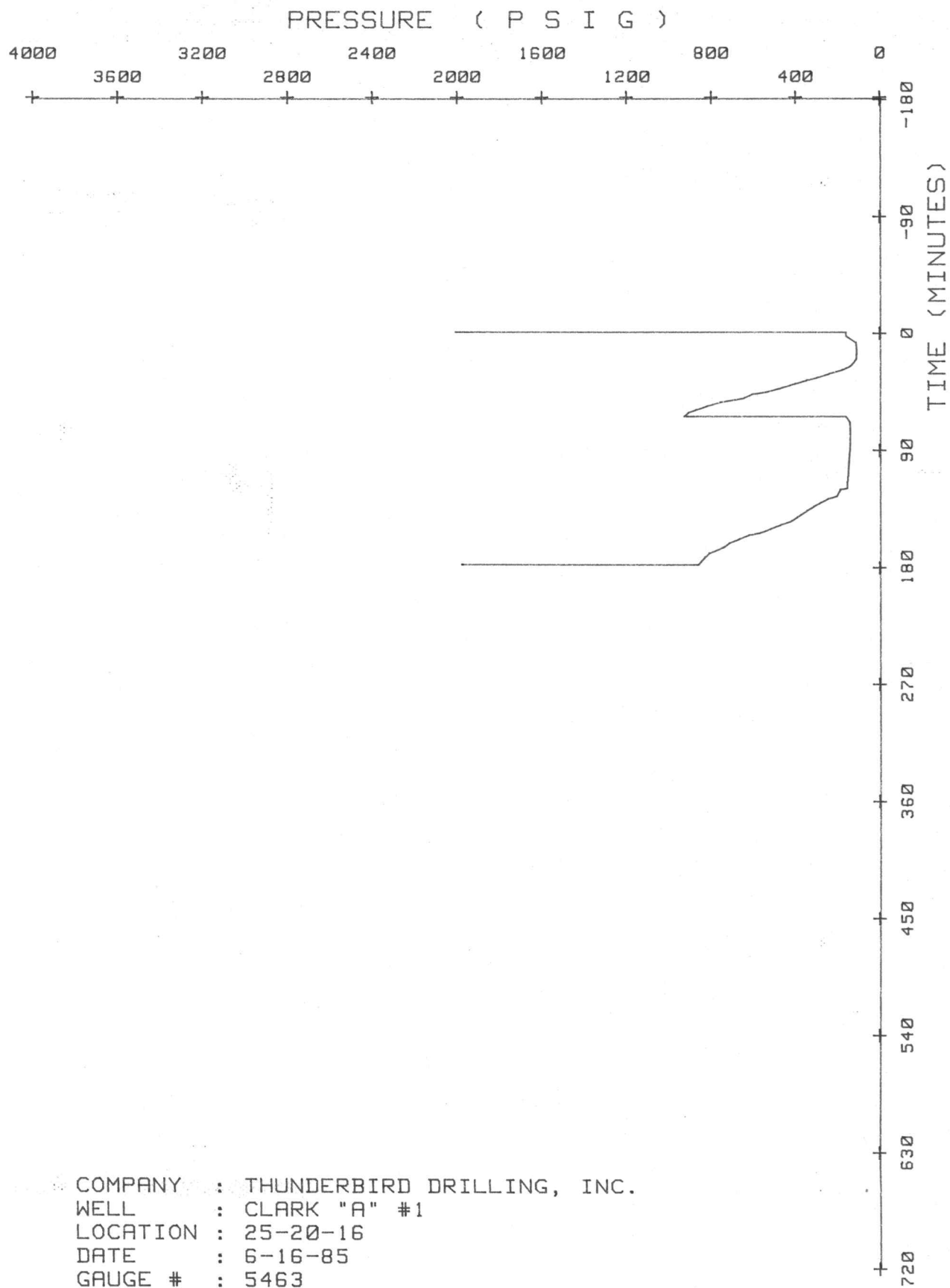
DST Number:2

Test ticket number:8736

Sample #	Total Feet	***** Gas *****	***** Oil *****	***** Mud *****
		% Feet	% Feet	% Feet
1	60	23.00 13.80	2.00 1.20	75.00 45.00
2	60	12.00 7.20	30.00 18.00	50.00 30.00
3	120	15.00 18.00	55.00 66.00	22.00 26.40
4	60	9.00 5.40	65.00 39.00	20.00 12.00
5	60	9.00 5.40	28.00 16.80	50.00 30.00
TOTAL	360	13.83 49.80	39.17 141.00	39.83 143.40

Sample #	Total Feet	**** WATER ****	Chlorides (ppm)	Resistivity (ohms)	Temperature (deg)
1	60	0.00 0.00	0.00	0.00	0.00
2	60	8.00 4.80	0.00	0.00	0.00
3	120	8.00 9.60	0.00	0.00	0.00
4	60	6.00 3.60	0.00	0.00	0.00
5	60	13.00 7.80	0.00	0.00	0.00
TOTAL	360	7.17 25.80			

INTERPRETATION BY : SUPERIOR TESTERS INC.

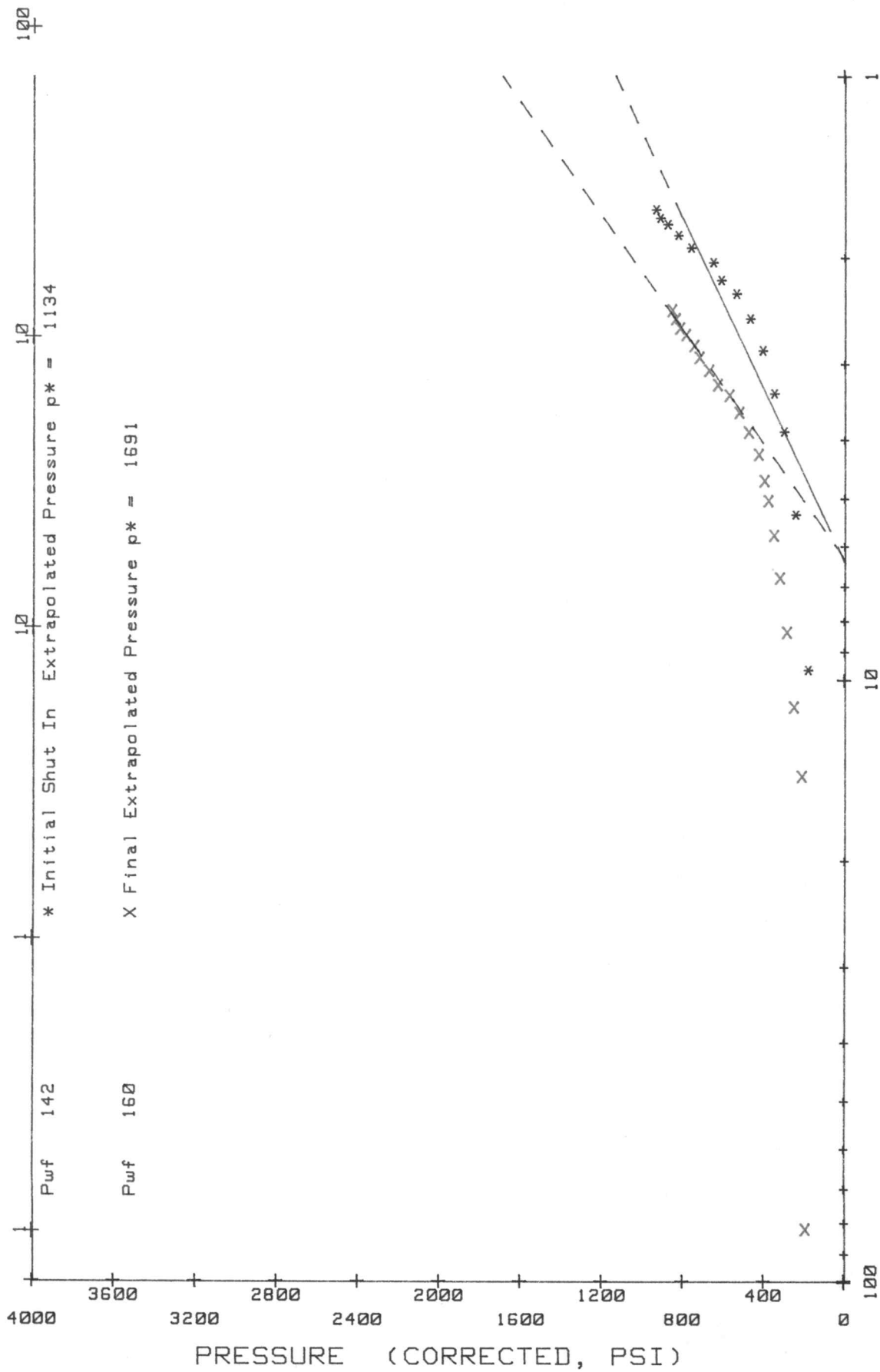


COMPANY : THUNDERBIRD DRILLING, INC.
WELL : CLARK "A" #1
LOCATION : 25-20-16
DATE : 6-16-85
GAUGE # : 5463

LOCATION : 25-20-16

DATE : 6-16-85

GAUGE # : 5463



SUPERIOR TESTERS ENTERPRISES, INC.

HORNER ANALYSIS

COMPANY : THUNDERBIRD DRILLING, INC.
 WELL NAME : CLARK "A" #1
 LOCATION : 25-20-16
 STATE & COUNTY : KANSAS, PAWNEE
 DATE OF TEST : 6-16-85
 TEST INT. KB : 3757 to 3780
 TOTAL INTERVAL (ft) K.B. : 23.00
 ELEV.(GR) : 2034 (KB) :
 FIELD :

ELEMENT SERIAL NO. : 5463
 LATEST CALIBRATION :

COMMENTS	TIME min	(T+dt)/dt min	----- PRESSURES CORR PSIG -----
Refer. depth : 3774.0 ft-kb			
-07:41 END FLOW	0.00	0.00	142.20
	3.00	9.67	179.82
	6.00	5.33	242.20
	9.00	3.89	300.00
	11.00	3.36	348.62
	14.00	2.86	405.50
	17.00	2.53	467.89
	20.00	2.30	535.78
	22.00	2.18	610.09
	25.00	2.04	650.46
	28.00	1.93	758.72
	31.00	1.84	822.02
	34.00	1.76	875.23
	36.00	1.72	911.01
	39.00	1.67	932.11
-08:20 1ST SHUT-IN	0.00	0.00	932.11

INTERPRETATION BY : SUPERIOR TESTERS INC.

SUPERIOR TESTERS ENTERPRISES, INC.

DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
DATE OF TEST : 6-16-85 LOCATION : 25-20-16
DST. NO : 2 SHUT-IN PERIOD : 1

INTERPRETIVE DATA (OIL)

EXTRAPOLATED RESERVOIR PRESSURE (psi):	1134.00
Slope of Build-up Curve (psi/log cycle):	1409.51
Effective Producing Time (min):	26.00

INTERPRETATION BY : SUPERIOR TESTERS INC.

SUPERIOR TESTERS ENTERPRISES, INC.

HORNER ANALYSIS

COMPANY : THUNDERBIRD DRILLING, INC.
 WELL NAME : CLARK "A" #1
 LOCATION : 25-20-16
 STATE & COUNTY : KANSAS, PAWNEE
 DATE OF TEST : 6-16-85
 TEST INT. KB : 3757 to 3780
 TOTAL INTERVAL (ft) K.B. : 23.00
 ELEV. (GR) : 2034 (KB) :
 FIELD :

ELEMENT SERIAL NO. : 5463
 LATEST CALIBRATION :

COMMENTS	TIME min	(T+dt)/dt min	----- PRESSURES CORR PSIG -----
Refer. depth : 3774.0 ft-kb			
-09:16 END FLOW	0.00	0.00	159.63
	1.00	82.00	190.83
	6.00	14.50	210.09
	8.00	11.13	249.54
	11.00	8.36	284.40
	14.00	6.79	319.27
	17.00	5.76	348.62
	20.00	5.05	376.15
	22.00	4.68	395.41
	25.00	4.24	423.85
	28.00	3.89	473.39
	31.00	3.61	520.18
	34.00	3.38	568.81
	36.00	3.25	625.69
	39.00	3.08	669.72
	42.00	2.93	716.51
	45.00	2.80	742.20
	48.00	2.69	782.57
	50.00	2.62	812.84
	53.00	2.53	833.94
	56.00	2.45	851.38
	59.00	2.37	866.97
	0.00	0.00	866.97
	0.00	0.00	866.97
-10:15 2ND SHUT-IN	0.00	0.00	866.97

INTERPRETATION BY : SUPERIOR TESTERS INC.

SUPERIOR TESTERS ENTERPRISES, INC.

DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
DATE OF TEST : 6-16-85 LOCATION : 25-20-16
DST. NO : 2 SHUT-IN PERIOD : 2

INTERPRETIVE DATA (OIL)

EXTRAPOLATED RESERVOIR PRESSURE (psi):	1691.00
Slope of Build-up Curve (psi/log cycle):	2116.84
Effective Producing Time (min):	81.00

INTERPRETATION BY : SUPERIOR TESTERS INC.

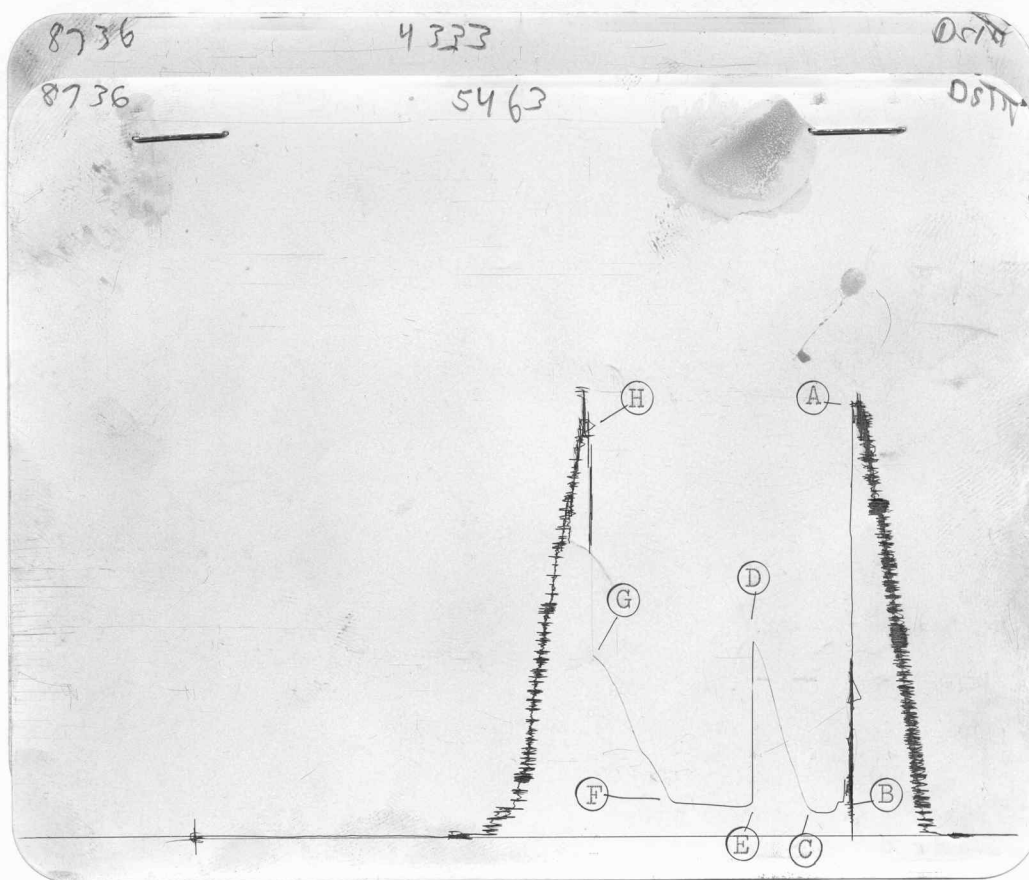
DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING, INC. WELL NAME : CLARK "A" #1
 DATE OF TEST : 6-16-85 LOCATION : 25-20-16
 DST. NO : 2 SHUT-IN PERIOD : 2

INTERPRETIVE DATA (OIL)

TRANSMISSIBILITY		1.40
Oil (md.ft/cp):	.....	0.00
Gas (md.ft/cp):	.....	
EFFECTIVE PERMEABILITY		.14
Oil (md):	.....	0.00
Gas (md):	.....	
TOTAL MOBILITY (md/cp):	.....	.20
TOTAL COMPRESSIBILITY (psi ⁻¹):	.....	3.70E-06
ESTIMATED DAMAGE RATIO:	.....	.16
CALCULATED DAMAGE RATIO:	.....	.22
Reservoir Temperature (F):	.....	101.00
Formation Porosity :	.....	.20
Formation Thickness (ft):	.....	10.00
Wellbore Radius (in):	.....	3.94
Reservoir Compressibility (psi ⁻¹):	.....	4.80E-07
Calculated Skin Factor :	.....	-2.96
PRODUCTION WITH DAMAGE REMOVED (bbl/D):	.....	4.02
PRODUCTIVITY INDEX (bbl/psi):	.....	.01
Final Flow Pressure (psi):	.....	160.00
APPROXIMATE RADIUS OF INVESTIGATION (ft):	.....	19.35
Total Flowing Time (min):	.....	81.00
EXTRAPOLATED RESERVOIR PRESSURE (psi):	.....	1691.00
Slope of Build-up Curve (psi/log cycle):	.....	2116.84
Effective Producing Time (min):	.....	81.00

INTERPRETATION BY : SUPERIOR TESTERS INC.



POINT	PRESSURE		
	FIELD READING	OFFICE READING	
(A) Initial Hydrostatic Mud	2061	2011	P.S.I.
(B) First Initial Flow Pressure	109	164	P.S.I.
(C) First Final Flow Pressure	117	142	P.S.I.
(D) Initial Closed-in Pressure	917	932	P.S.I.
(E) Second Initial Flow Pressure	128	161	P.S.I.
(F) Second Final Flow Pressure	155	159	P.S.I.
(G) Final Closed-in Pressure	862	866	P.S.I.
(H) Final Hydrostatic Mud	2024	1980	P.S.I.