FLUID SAMPLE DATA

Sampler Pressure 0 P.S.I.G. at Surface
Recovery: Cu. Ft. Gas .011
cc. Oil 200 28%
cc. Water 3%
cc. Mud 1600 52%
Tot. Liquid cc. 1800
Gravity ° API @ °F.
Gas/Oil Ratio cu. ft./bbl.

	RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@ °F.		ppm
Recovery Mud	@ °F.		ppm
Recovery Mud Filtrate	@ °F.		ppm
Mud Pit Sample	1.5 @ 72 °F.		3000 ppm
Mud Pit Sample Filtrate	1.18 @ 72 °F.		800.5 ppm

Mud Weight 9.1 vis 42 sec.

Date 7-31-81 Ticket Number 178475
Kind of D.S.T. OPEN HOLE Halliburton Location OBERLIN
Tester JACK MOORE Witness BRINKMAN
Drilling Contractor RAINS AND WILLIAMSON DRILLING COMPANY

EQUIPMENT & HOLE DATA

Formation Tested Lower Kansas City
Elevation 2777' Ft.
Net Productive Interval - Ft.
All Depths Measured From Kelly Bushing
Total Depth 3861' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length - I.D. -
Drill Pipe Length 3812' I.D. 3.826" ??
Packer Depth(s) 3836' - 3842' Ft.
Depth Tester Valve 3819' Ft.

Cushion TYPE NONE AMOUNT Ft. Depth Back Pres. Valve NONE Surface Choke 1/4" Bottom Choke 3/4"

Recovered 40' Feet of oil cut mud - 3% water - 46% mud and 51% oil..
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Remarks SEE PRODUCTION TEST DATA SHEET...

TEMPERATURE	Gauge No. 536	Gauge No. 392	Gauge No.	TIME (00:00-24:00 hrs.)
	Depth: 3821' Ft.	Depth: 3858' Ft.	Depth: Ft.	
	12 Hour Clock	12 Hour Clock	Hour Clock	Tool Opened 1605
Est. °F.	Blanked Off NO	Blanked Off YES	Blanked Off	
3856' Actual 104 °F.	Pressures	Pressures	Pressures	Opened - Bypass 2005

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		1937	1914.4	1966	1932.5				
First Period	Flow Initial	8	17.8	33	47.3			—	—
	Flow Final	12	19.1	35	34.7			15	
	Closed in	61	57.4	78	70.8			30	
Second Period	Flow Initial	12	21.0	41	48.8			—	—
	Flow Final	16	25.5	45	42.8			60	
	Closed in	98	117.6	127	127.9			135	
Third Period	Flow Initial							—	—
	Flow Finol								
	Closed in								
Finol Hydrostatic		1889	1888.4	1917	1904.0			—	—

Legal Location Sec. - Twp. - Rng. 12 - 2S - 30W
Lease Name MINES
Well No. 2-12
Test No. 2
Tested Interval 3842' - 3861'
Field Area -
County DECATUR
State KANSAS
Lease Owner/Company Name RESOURCES INVESTMENT CORPORATION
Mea. From Tester Valve

FORM 161-R2 – PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S

5

Casing perfs. _____ Bottom choke .75" Surf. temp _____ °F Ticket No. 178475

Gas gravity _____ Oil gravity _____ GOR _____

Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date 7-31-81 Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
1100					Called out.
1220					On location.
1345					Picked up the tool.
1410					Tool in the table.
1602					On bottom.
1605					Tool opened with a weak blow from 1" -
					died in 15 minutes.
1620					Closed tool.
1650					Opened tool with a weak blow from 3/4"
					which died in 11 minutes.
1750					Closed tool.
2005					Off bottom. Tool in the table. Tool
					laid down. Charts read - job complete..

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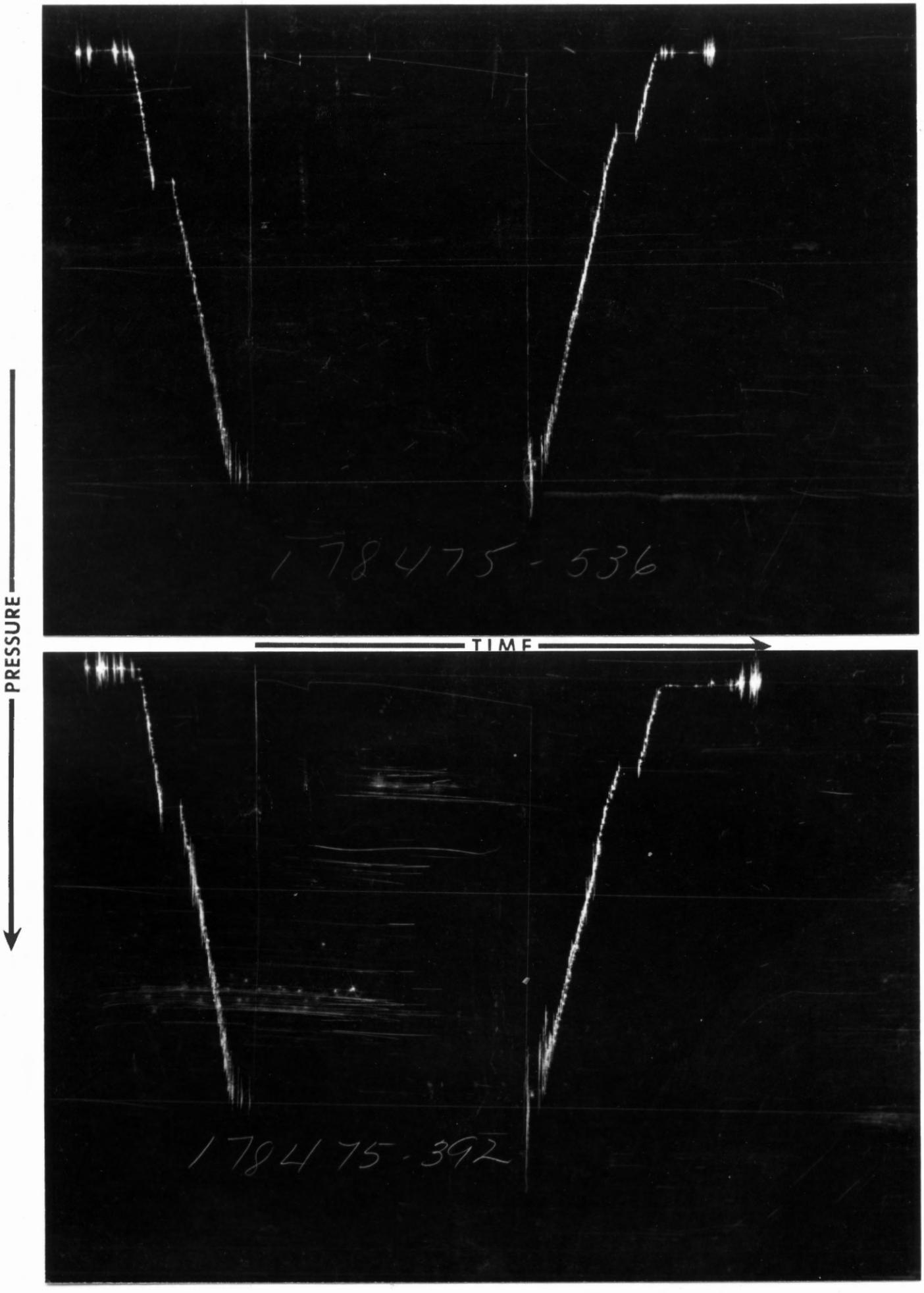
PRODUCTION TEST DATA

LITTLE'S

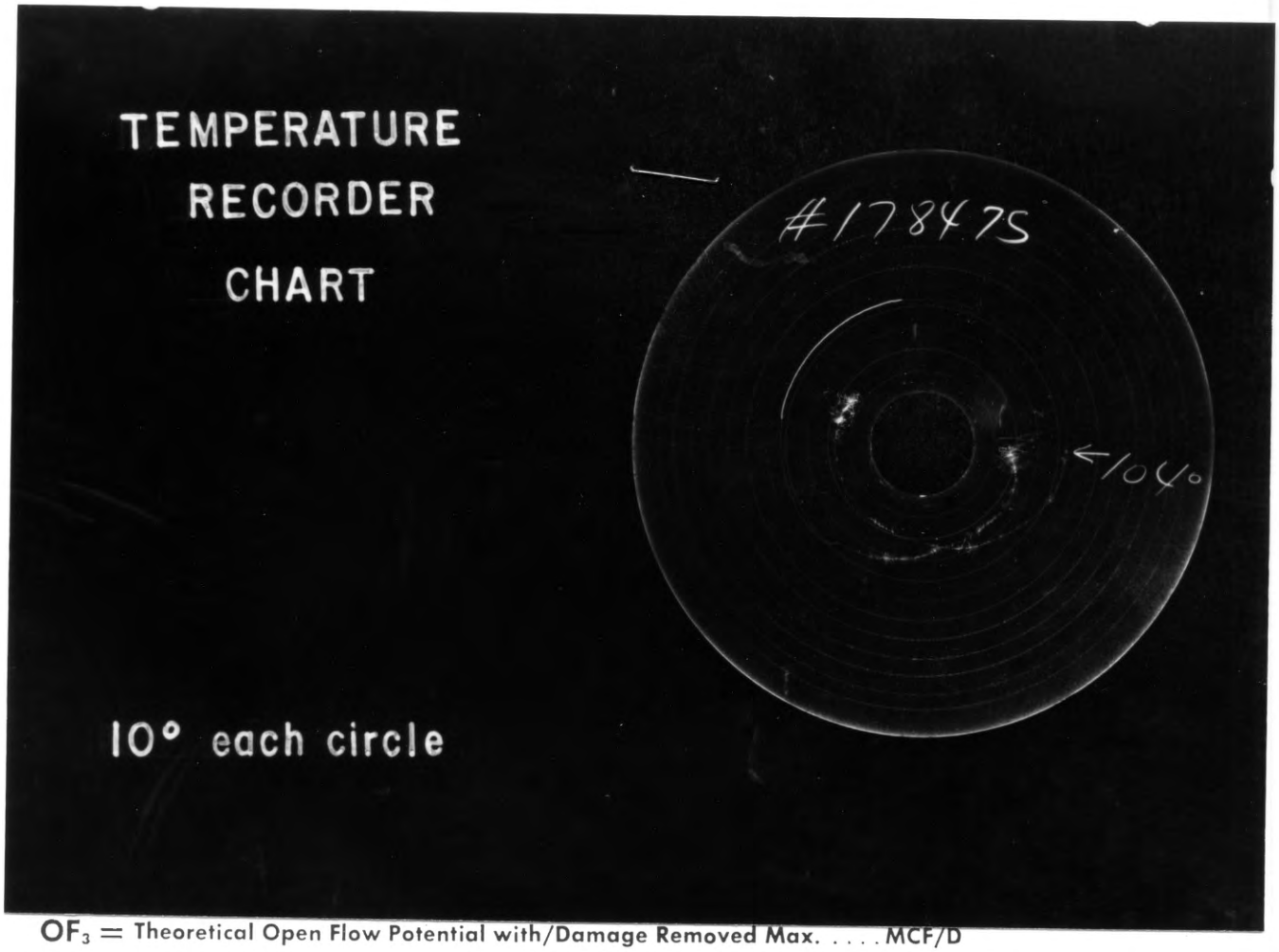
5

TICKET NO. 178475

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars	5 3/4"		1'	
Reversing Sub				
Water Cushion Valve				
Drill Pipe	4½"	3.826" ??	3812'	
Drill Collars				
~~Reversing Sub & Choke Assembly~~ X-O SUB	5 3/4"		1'	
Dual CIP Valve				
Dual CIP Sampler	5"		7'	
Hydro-Spring Tester	5"		5'	3819'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"		4'	3821'
Hydraulic Jar	5"		5'	
VR Safety Joint	5"		3'	
Pressure Equalizing Crossover				
Packer Assembly				
Distributor				
Packer Assembly				
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	6 3/4"		6'	3836'
Distributor				
Packer Assembly	6 3/4"		6'	3842'
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"		11'	
	5"		2'	
Blanked-Off B.T. Running Case	5"		4'	3858'
Total Depth				3861'



Each Horizontal Line Equal to 1000 p.s.i.



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_{ot} = 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_o = Total Flow Time . . . . . Minutes

T = Temperature Rankine . . . . . °R

Z = Compressibility Factor . . . . . ——

μ = Viscosity Gas or Liquid . . . . . CP

Log = Common Log

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

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud 2150
Tot. Liquid cc. 2150
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY			CHLORIDE CONTENT
Recovery Water	____	@ ____	°F.	____	ppm
Recovery Mud	1.20	@ 84	°F.	3000	ppm
Recovery Mud Filtrate	____	@ ____	°F.	____	ppm
Mud Pit Sample	1.40	@ 94	°F.	3000	ppm
Mud Pit Sample Filtrate	____	@ ____	°F.	____	ppm

Mud Weight 9.3 vis 41 sec.

Date 8-1-81 Ticket Number 346026
Kind of D.S.T. OPEN HOLE Halliburton Location OBERLIN
Tester MR. MOORE Witness MR. BRINKEMAN
Drilling Contractor RAINS & WILLIAMSON DRILLING COMPANY

EQUIPMENT & HOLE DATA

Formation Tested Lower Kansas City "C" Zone
Elevation 2777' Ft.
Net Productive Interval - Ft.
All Depths Measured From Kelly Bushing
Total Depth 3890' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length - I.D. -
Drill Pipe Length 3840' I.D. 3.826"
Packer Depth(s) 3869' 3875' Ft.
Depth Tester Valve 3853' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke .25" Bottom Choke .75"

Recovered 13 Feet of mud
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks SEE PRODUCTION TEST DATA SHEET....

TEMPERATURE	Gauge No. 536	Gauge No. 392	Gauge No.	TIME (00:00-24:00 hrs.)
	Depth: 3855' Ft.	Depth: 3887' Ft.	Depth: Ft.	
	12 Hour Clock	12 Hour Clock	Hour Clock	Tool Opened 1240
Est. °F.	Blanked Off NO	Blanked Off YES	Blanked Off	
Actual 3885' 102 °F.	Pressures	Pressures	Pressures	Opened Bypass 1625

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic			1929.3	1990.3	1942.3				
First Period	Flow Initial		8.1	16.5	23.0			—	—
	Flow Final		8.1	16.5	23.0			15	
	Closed in		9.8	16.5	23.8			30	
Second Period	Flow Initial		10.6	16.5	26.3			—	—
	Flow Final		10.6	24.7	27.1			60	
	Closed in		22.9	32.9	37.8			120	
Third Period	Flow Initial							—	—
	Flow Final								
	Closed in								
Final Hydrostatic			1924.5	1974.1	1935.8			—	—

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FORMATION TEST DATA

LITTLE'S

Legal Location Sec. - Twp. - Rng. 12 2S 30W
Lease Name MINES
Well No. 2-12
Test No. 3
Tested Interval 3875' to 3890'
Lease Owner/Company Name RESOURCES INVESTMENT CORPORATION
Field Area
County DECATUR
State KANSAS

5

Casing perfs._____ Bottom choke_____ Surf. temp_____ °F Ticket No. 346026

Gas gravity_____ Oil gravity_____ GOR_____

Spec. gravity_____ Chlorides_____ ppm Res._____ @_____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED_____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
1240					Opened tool.
1255					Closed tool.
1325					Reopened tool.
1425					Closed tool.
1625					Opened bypass and came out of hole.

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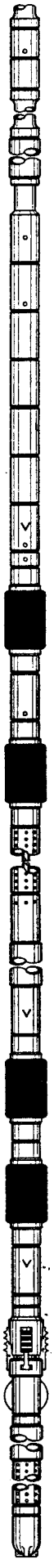
PRODUCTION TEST DATA

LITTLE'S

5

TICKET NO. 346026



	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub	5.75"	3.00"	1.00'	
Water Cushion Valve				
Drill Pipe	4.50"	3.826"	3840'	
Drill Collars				
Handling Sub & Choke Assembly				
Dual CIP Valve				
Dual CIP Sampler	5.00"	.75"	7.00'	
Hydro-Spring Tester	5.00"	.75"	5.00'	3853'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5.00"	3.06"	4.00'	3855'
Hydraulic Jar	5.00"	.87"	5.00'	
VR Safety Joint	5.00"	1.00"	3.00'	
Pressure Equalizing Crossover				
Packer Assembly				
Distributor				
Packer Assembly				
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	6.75"	.75"	6.00'	3869'
Distributor				
Packer Assembly	6.75"	.75"	6.00'	3875'
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5.00"	3.84"	7.00'	
~~5.00"~~ HT-500	~~3.00"~~	~~2.00'~~	3885'	
Blanked-Off B.T. Running Case	5.00"	2.44"	4.00'	3887'
Total Depth				3890'

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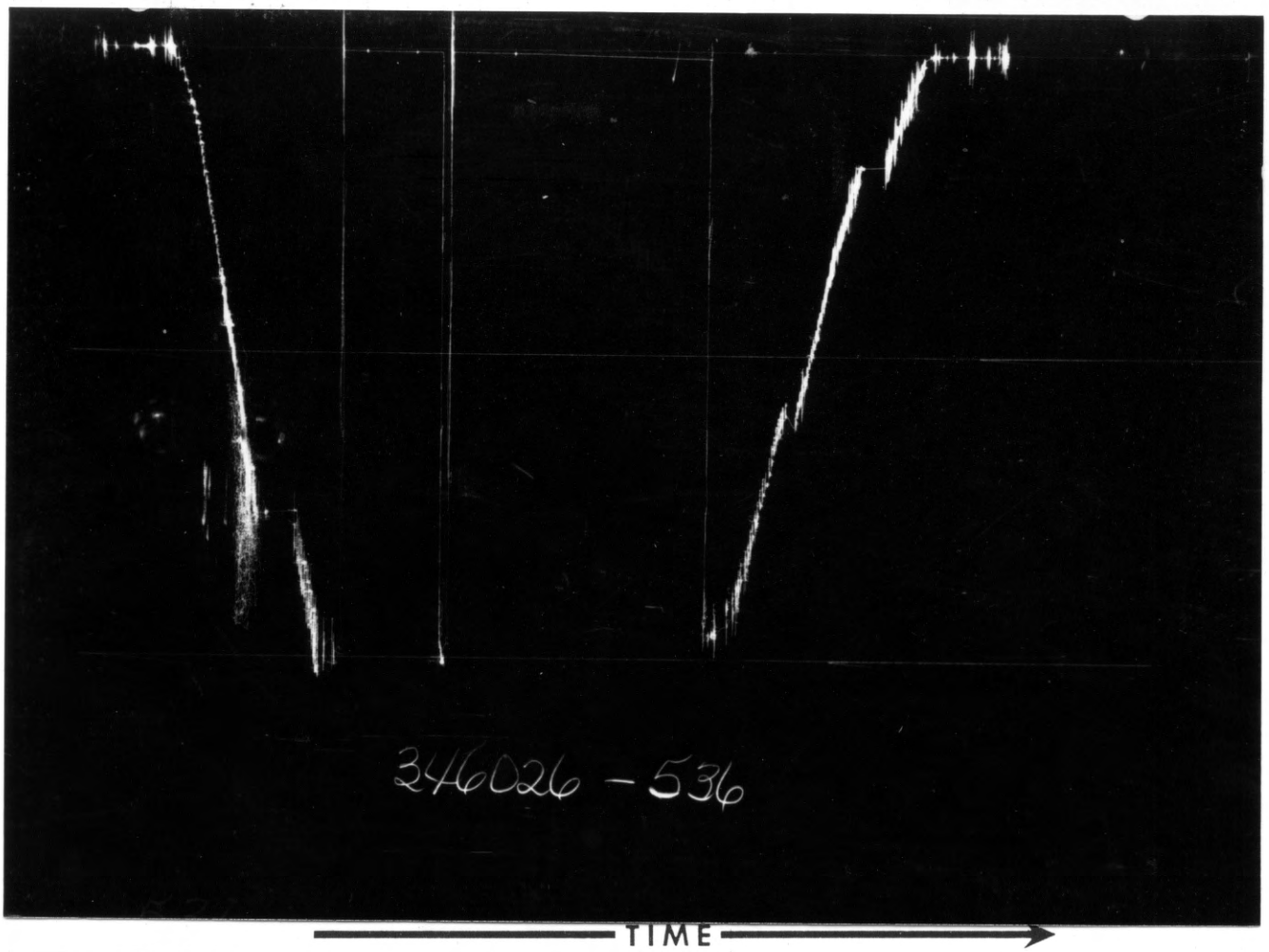
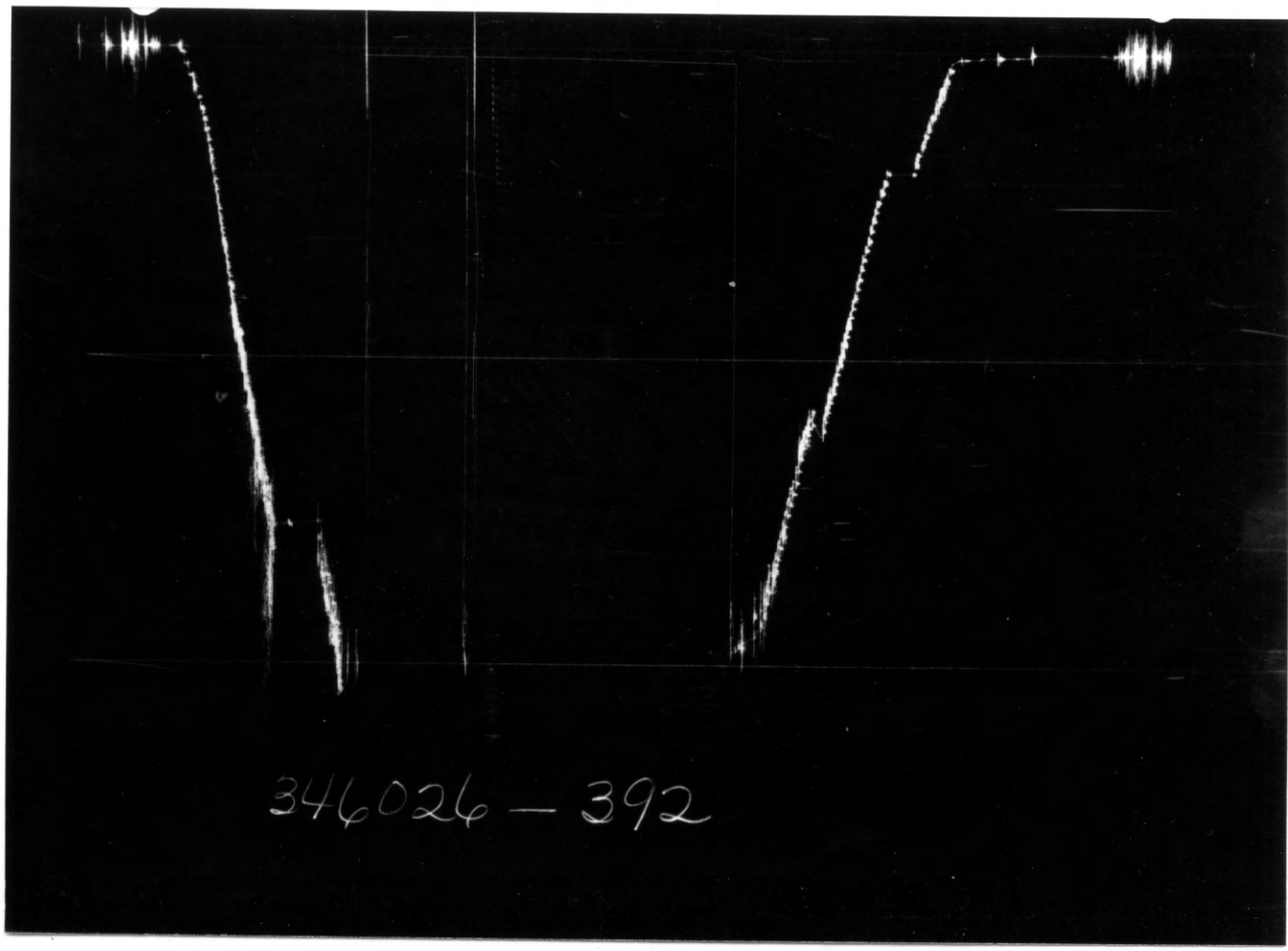
EQUIPMENT DATA

LITTLE'S

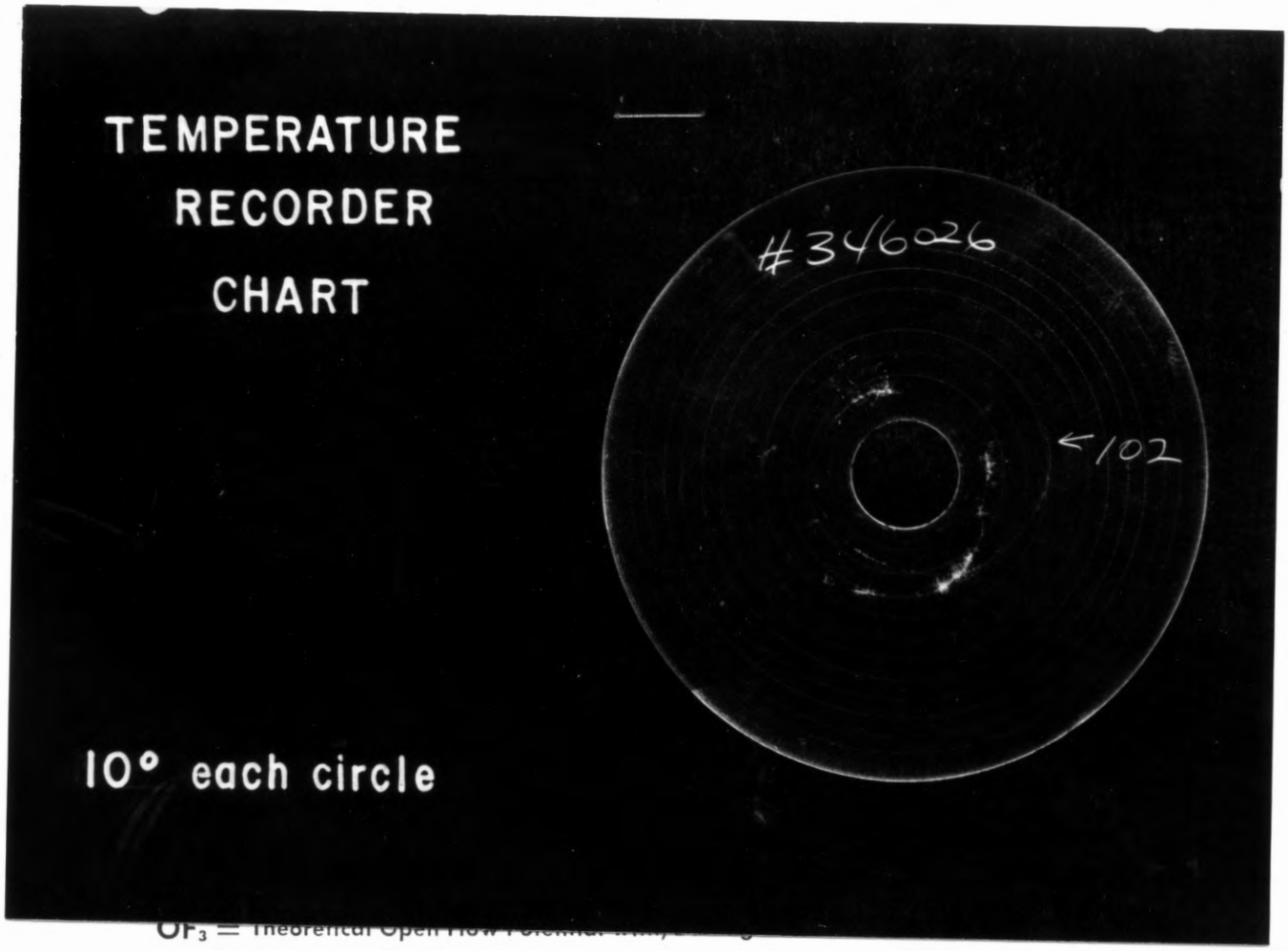


PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.



OF_3 = Theoretical Open Flow Potential [illegible]

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_{ot} = 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_o = Total Flow Time . . . . . Minutes

T = Temperature Rankine . . . . . °R

Z = Compressibility Factor . . . . . ——

μ = Viscosity Gas or Liquid . . . . . CP

Log = Common Log

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

FLUID SAMPLE DATA

Sampler Pressure 0 P.S.I.G. at Surface
Recovery: Cu. Ft. Gas 0
cc. Oil 100 8%
cc. Water 0 2%
cc. Mud 1650 9%
Tot. Liquid cc. 1750
Gravity ° API @ °F.
Gas/Oil Ratio cu. ft./bbl.

		RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@	°F.		ppm
Recovery Mud	@	°F.		ppm
Recovery Mud Filtrate	@	°F.		ppm
Mud Pit Sample	1.5 @	72 °F.	4700	ppm
Mud Pit Sample Filtrate	@	°F.		ppm

Mud Weight 9.3 vis 41 sec.

Date 8-2-81 Ticket Number 346027
Kind of D.S.T. OPEN HOLE Halliburton Location OBERLIN
Tester JACK MOORE Witness RAY HOPKINS
Drilling Contractor RAINS AND WILLIAMSON SM vt bj

EQUIPMENT & HOLE DATA

Formation Tested Lower Kansas City F Zone
Elevation 2777' Ft.
Net Productive Interval - Ft.
All Depths Measured From Kelly Bushing
Total Depth 3935' Ft.
Main Hole/Casing Size 7.875"
Drill Collar Length - I.D. -
Drill Pipe Length 3885' I.D. 3.826"
Packer Depth(s) 3914'-3920' Ft.
Depth Tester Valve 3898' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke .25" Bottom Choke .75"

Recovered 15 Feet of Oil cut mud
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks -SEE PRODUCTION TEST DATA SHEET-

*See attached special reading sheet

TEMPERATURE	Gauge No. 536 Depth: 3900' Ft.	Gauge No. 392 Depth: 3932' Ft.	Gauge No. Depth: Ft.	TIME (00:00-24:00 hrs.)
	- Hour Clock	- Hour Clock	Hour Clock	Tool Opened 1210
Est. 3930' °F.	Blanked Off NO	Blanked Off YES	Blanked Off	Opened Bypass 1557
Actual 103 °F.	Pressures	Pressures	Pressures	

	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		1938.6	1998	1957.2				
First Period Flow Initial		7.2	41.2	36.8			—	—
First Period Flow Final		8.7	32.9	31.5			15	*
First Period Closed in		34.5	49.4	51.8			30	*
Second Period Flow Initial		9.0	32.9	34.8			—	—
Second Period Flow Final		10.6	32.9	27.5			62	*
Second Period Closed in		1118.7	1138	1135.0			120	*
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic		1926.6	1970	1945.5			—	—

Legal Location Sec. - Twp. - Rng. 12-2S-30W
Lease Name MINES
Well No. 2-12
Test No. 4
Tested Interval 3920'-3935'
Lease Owner/Company Name RESOURCES INVESTMENT CORPORATION
Field Area
County DECATUR
State KANSAS

FORM 181-R2 – PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S

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Casing perfs._____ Bottom choke_____ Surf. temp._____ °F Ticket No. 346027

Gas gravity_____ Oil gravity_____ GOR_____

Spec. gravity_____ Chlorides_____ ppm Res._____ @_____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED_____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
0630					Called out-ready at 0830.
0830					On location.
1010					Picked up tool.
1030					Tool in table.
1206					On bottom.
1210					Tool opened with very weak blow on
					surface died in 5 minutes.
1225					Closed tool.
1255					Opened tool with no blow.
1357					Closed tool.
1557					Off bottom.
1805					Tool in table.
1825					Sampler read out.
1840					Tool laid down.
1905					Charts read.
2115					Job completed.

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PRODUCTION TEST DATA

LITTLE'S

RESOURCES INVESTMENT CORPORATION
Lease Owner/Company Name

346027
Ticket Number

B.T. 536 B.T. _____ B.T. 392

Depth 3900' Depth _____ Depth 3932'

Time (minutes)	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
FLOW PERIOD #1						FLOW PERIOD #1		
0		7.2				0		36.8
16.8		8.7				15.0		31.5
CLOSED IN PERIOD #1						CLOSED IN PERIOD #1		
0		8.7				0		31.5
28.8		34.5				30.6		51.8
FLOW PERIOD #2						FLOW PERIOD #2		
0		9.0				0		34.8
62.0		10.6				62.0		27.5
CLOSED IN PERIOD #2						CLOSED IN PERIOD #2		
0		10.6				0		27.5
10		21.0				10		37.3
20		43.5				20		59.8
30		82.2				30		99.2
40		167.9				40		183.4
50		302.9				50		324.3
60		396.4				60		429.2
70		591.8				70		615.8
80		758.1				80		774.8
90		893.7				90		904.3
100		993.1				100		1006.9
110		1065.2				110		1084.9
119.4		1118.7				119.1		1135.0

Remarks: _____

80-2860

TICKET NO. 346027

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub				
Water Cushion Valve				
Drill Pipe	4.5"	3.826"	3885'	
Drill Collars				
Handling Sub & Choke Assembly				
Dual CIP Valve				
Dual CIP Sampler	5"	.75"	7'	
Hydro-Spring Tester	5"		5'	3898'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	3900'
Hydraulic Jar	5"	.87"	5'	
VR Safety Joint	5"	1"	3'	
Pressure Equalizing Crossover				
Packer Assembly				
Distributor				
Pocker Assembly				
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	6.75"	.75"	6'	3914'
Distributor				
Packer Assembly	6.75"	.75"	6'	3920'
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	3.84"	7'	
HT_500	5"	3"	2'	3930'
Blanked-Off B.T. Running Case	5"	2.44"	4'	3932'
Total Depth				3935'

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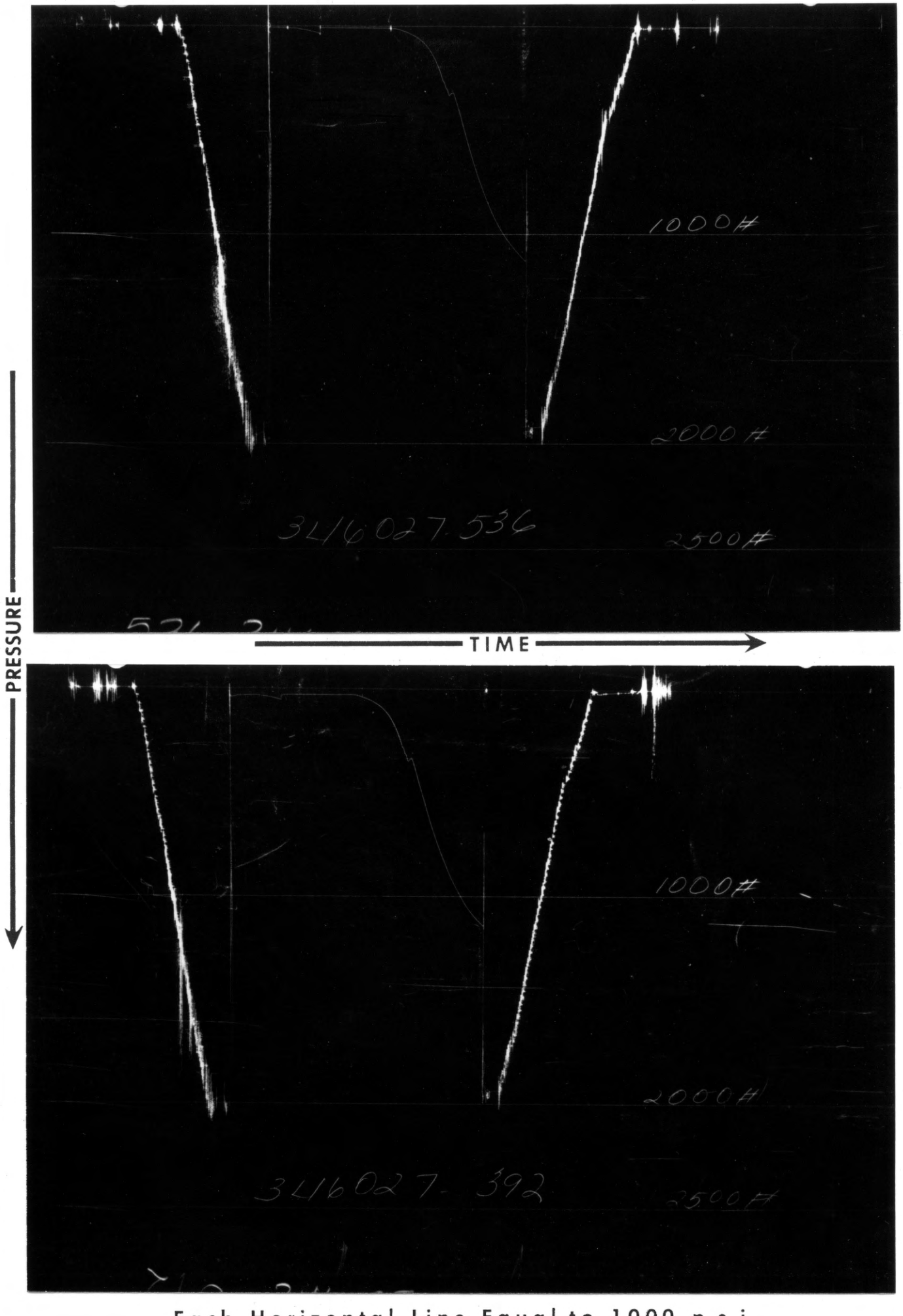
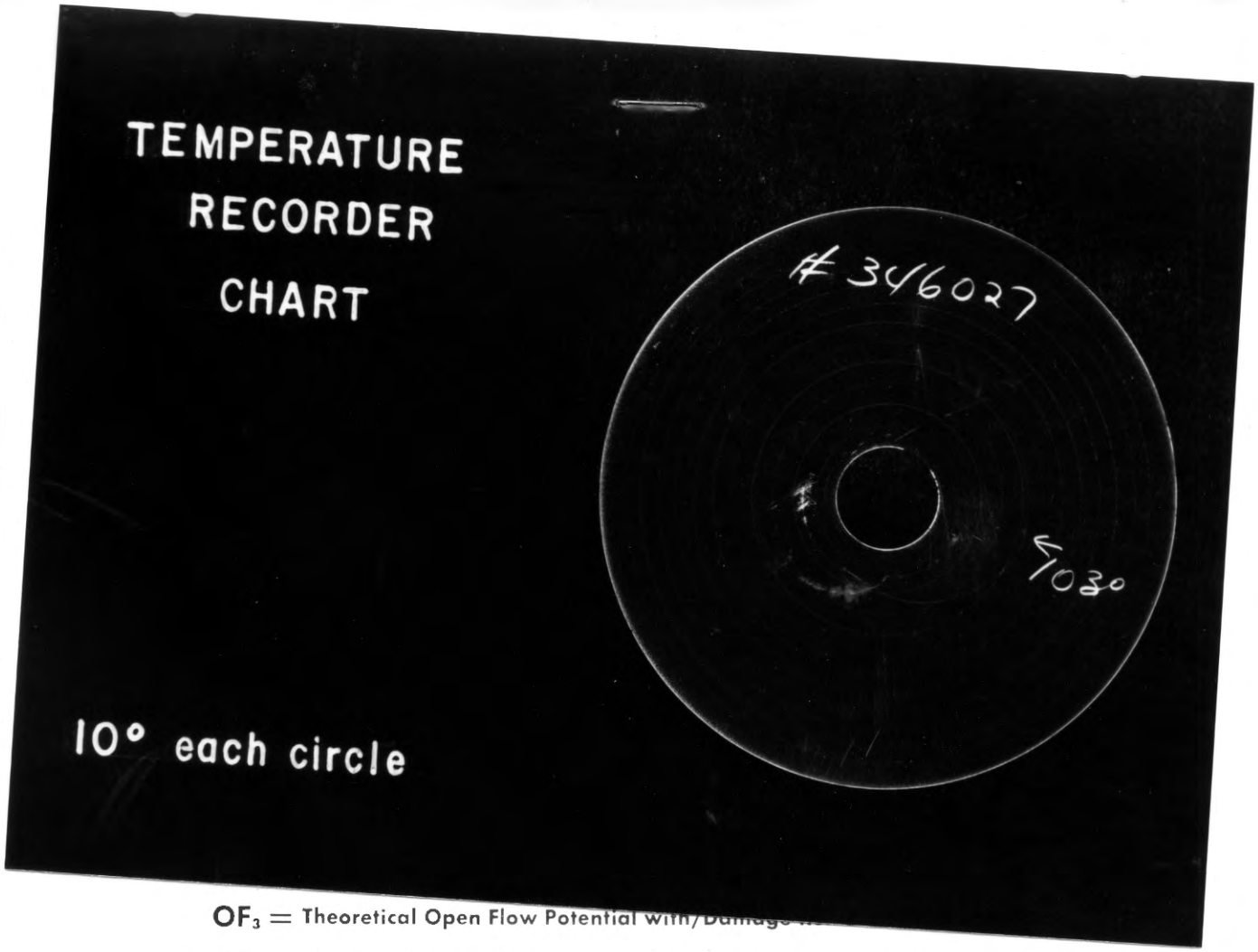
EQUIPMENT DATA

LITTLE'S



Each Horizontal Line Equal to 1000 p.s.i.



OF_3 = Theoretical Open Flow Potential with/Damage [illegible]

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_{ot} = 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_o = Total Flow Time . . . . . Minutes

T = Temperature Rankine . . . . . °R

Z = Compressibility Factor . . . . . ——

μ = Viscosity Gas or Liquid . . . . . CP

Log = Common Log

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