

BEMIS

Lease Name

1-20

Well No.

1

Test No.

3158 - 3176'

Tested Interval

GRAHAM-MICHAELIS CORPORATION

Lease Owner/Company Name

Legal Location
Sec. - Twp. - Ring.

20 13S 19W

Field Area
WEST YOSEMITO

County

ELLIS

State

KANSAS

FLUID SAMPLE DATA				Date 7-18-81		Ticket Number 047471	
Sampler Pressure _____ P.S.I.G. at Surface				Kind of D.S.T. OPEN HOLE		Halliburton Location HAYS	
Recovery: Cu. Ft. Gas _____				Tester RICHMEIER		Witness SPRADLIN	
cc. Oil _____				Drilling Contractor ABERCROMBIE DRILLING COMPANY PW/sm			
cc. Water _____				EQUIPMENT & HOLE DATA			
cc. Mud _____				Formation Tested Topeka			
Tot. Liquid cc. _____				Elevation 2090' Kelly bushing Ft.			
Gravity _____ ° API @ _____ °F.				Net Productive Interval 10' Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Kelly bushing			
RESISTIVITY _____ CHLORIDE CONTENT _____				Total Depth 3176' Ft.			
Recovery Water _____ @ _____ °F. _____ ppm				Main Hole/Casing Size 7.875"			
Recovery Mud _____ @ _____ °F. _____ ppm				Drill Collar Length 633' I.D. 2.764" WP			
Recovery Mud Filtrate _____ @ _____ °F. _____ ppm				Drill Pipe Length 2507' I.D. 3.826"			
Mud Pit Sample _____ @ _____ °F. _____ ppm				Packer Depth(s) 3154-3158' Ft.			
Mud Pit Sample Filtrate _____ @ _____ °F. _____ ppm				Depth Tester Valve 3147' Ft.			
Mud Weight 9.7 vis 38 sec.							
TYPE		AMOUNT		Depth Back		Surface	
Cushion				Ft. Pres. Valve		Choke .25" Bottom Choke .75"	
Recovered 300		Feet of muddy salt water					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks SEE PRODUCTION TEST DATA SHEET							
*See attached incremental pressure sheet							
TEMPERATURE		Gauge No. 7870		Gauge No. 7869		Gauge No.	
		Depth: 3149 Ft.		Depth: 3173 Ft.		TIME (00:00-24:00 hrs.)	
		12 Hour Clock		12 Hour Clock		Tool 7-18-81	
Est. °F.		Blanked Off no		Blanked Off Yes		Opened 2150	
Actual 119 °F.						Opened 7-18-81	
		Pressures		Pressures		Bypass 0035	
		Field Office		Field Office		Reported Computed	
Initial Hydrostatic		1668.0 1736		1686.6		Minutes Minutes	
First Period Flow Initial		7.7 30		24.7			
Flow Final		66.1 79		82.0		30 *	
Closed in		1010.5 1017		1023.3		45 *	
Second Period Flow Initial		79.1 79		94.7			
Flow Final		165.7 177		181.8		60 *	
Closed in		1005.7 1007		1017.4		90 *	
Third Period Flow Initial							
Flow Final							
Closed in							
Final Hydrostatic		1665.5 1678		1684.1			

Casing perms. _____ Bottom choke _____ Surf. temp. 85 °F Ticket No. 047471
 Gas gravity _____ Oil gravity _____ GOR _____
 Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED.

[illegible]

5

Lease Owner/Company Name

047471

Ticket Number

B.T. 7870

B.T. 7869

B.T. _____

Depth 3149'

Depth 3173'

Depth _____

Time (minutes)	Log $\frac{t + \Delta t}{\Delta t}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t + \Delta t}{\Delta t}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t + \Delta t}{\Delta t}$	PSIG Temp. Corr.
FLOW PERIOD 1			FLOW PERIOD 1					
0		7.7	0		24.7			
5		17.6	5		35.7			
10		29.3	10		45.9			
15		39.3	15		56.3			
20		49.4	20		65.6			
25		58.7	25		73.8			
29.5		66.1	29.3		82.0			
CLOSED IN PERIOD 1			CLOSED IN PERIOD 1					
0		66.1	0		82.0			
3		822.2	3		822.8			
6		880.6	6		884.3			
9		913.4	9		919.2			
12		934.4	12		940.9			
15		950.5	15		958.1			
18		961.4	18		971.2			
21		970.6	21		980.4			
24		978.5	24		989.3			
27		986.0	27		997.0			
30		991.3	30		1001.9			
33		996.7	33		1007.7			
36		1000.4	36		1012.8			
39		1004.3	39		1016.1			
42		1008.2	42		1019.8			
45.0		1010.5	44.9		1023.3			
FLOW PERIOD 2			FLOW PERIOD 2					
0		79.1	0		94.7			
10		86.9	10		102.1			
20		104.4	20		119.8			
30		120.0	30		135.5			
40		135.2	40		149.8			
50		150.1	50		164.3			
61.2		165.7	61.1		181.8			

Remarks: _____

047471
Ticket Number

B.T. _____

Depth _____

[illegible]

Remarks: _____

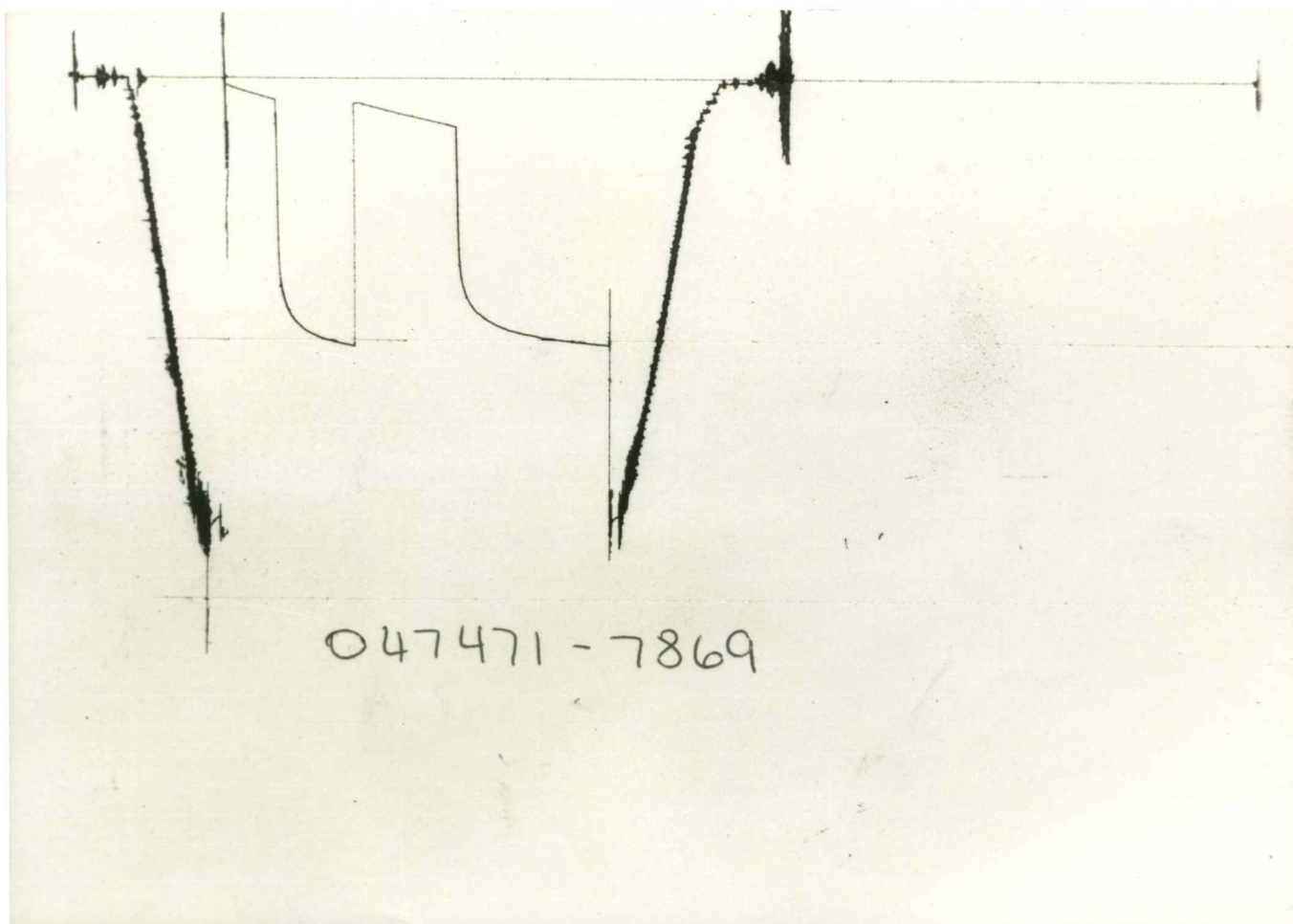
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	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	4.5"	3.826	2507'	
Drill Collars				
Reversing Sub	6"	3"	1'	3023'
Water Cushion Valve				
Drill Pipe - weight pipe	4.5"	2.764"	633'	
Drill Collars				
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	3141'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	3147'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	3149'
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	4'	3154'
Distributor				
Packer Assembly	6.75"	1.53"	4'	3158'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	3.84"	11'	
HT 500 temp recorder	5"	3.75"	1'	3171'
Blanked-Off B.T. Running Case	5"	2.44"	4'	3173'
Total Depth				3176'

— PRESSURE —
↓



— TIME —→



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

TEMPERATURE RECORDER CHART



10° each circle

Q_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_{or} = 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.

BEMIS
1-20
2
3377' - 3414'
GRAHAM - MICHAELIS CORPORATION

Legal Location Sec. - Twp. - Rng. 20 - 13S - 19W
Lease Name
Well No.
Test No.
Tested Interval
County
State
KANSAS

Date	7-19-81	Ticket Number	158755
Kind of D.S.T.	OPEN HOLE	Halliburton Location	HAYS
Tester	MR. SCHMEIDLER	Witness	MR. SPRADLIN
Drilling Contractor	ABERCROMBIE #4	IC	
EQUIPMENT & HOLE DATA			
Formation Tested	Toronto		
Elevation	2090'		Ft.
Net Productive Interval	4'		Ft.
All Depths Measured From	Kelly Bushing		
Total Depth	3414'		Ft.
Main Hole/Casing Size	7.875"		
Drill Collar Length	605'	WP I.D. 2.764"	WP
Drill Pipe Length	2458'	I.D. 3.826"	
Packer Depth(s)	3373'-3377'		Ft.
Depth Tester Valve	3366'		Ft.

FLUID SAMPLE DATA	
Sampler Pressure	P.S.I.G. at Surface
Recovery: Cu. Ft. Gas	
cc. Oil	
cc. Water	
cc. Mud	
Tot. Liquid cc.	
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	@ °F. ppm
Mud Pit Sample Filtrate	@ °F. ppm
Mud Weight	9.9 vis 43 sec.

Cushion	TYPE	AMOUNT	Depth Back Pres. Valve	Surface Choke	Bottom Choke
Recovered		10 Feet of Mud		.25"	.75"
Recovered		Feet of			
Recovered		Feet of			
Recovered		Feet of			
Recovered		Feet of			

Remarks SEE PRODUCTION TEST DATA SHEET.

Charts indicate tools bypassed during final portion of initial closed in pressure.

TEMPERATURE	Gauge No. 7870	Gauge No. 7869	Gauge No.	TIME
	Depth: 3368' Ft.	Depth: 3411' Ft.	Depth: Ft.	(00:00-24:00 hrs.)
Est. °F.	12 Hour Clock	12 Hour Clock	Hour Clock	Tool
3409'@	Blanked Off NO	Blanked Off YES	Blanked Off	Opened 00:05
Actual 117 °F.				Opened
	Pressures	Pressures	Pressures	Bypass 02:05
	Field Office	Field Office	Field Office	Reported Computed
Initial Hydrostatic	- 1779.0	1823 1811.6		Minutes Minutes
First Period Flow Initial	- 7.0	39 37.2		
Flow Final	- 8.0	39 39.2		
Closed in	- 17.0	59 47.0		30 45
Second Period Flow Initial	- 12.0	49 43.1		
Flow Final	- 12.0	49 43.1		
Closed in	- 21.0	59 50.9		15 30
Third Period Flow Initial				
Flow Final				
Closed in				
Final Hydrostatic	- 1779.0	1814 1811.6		

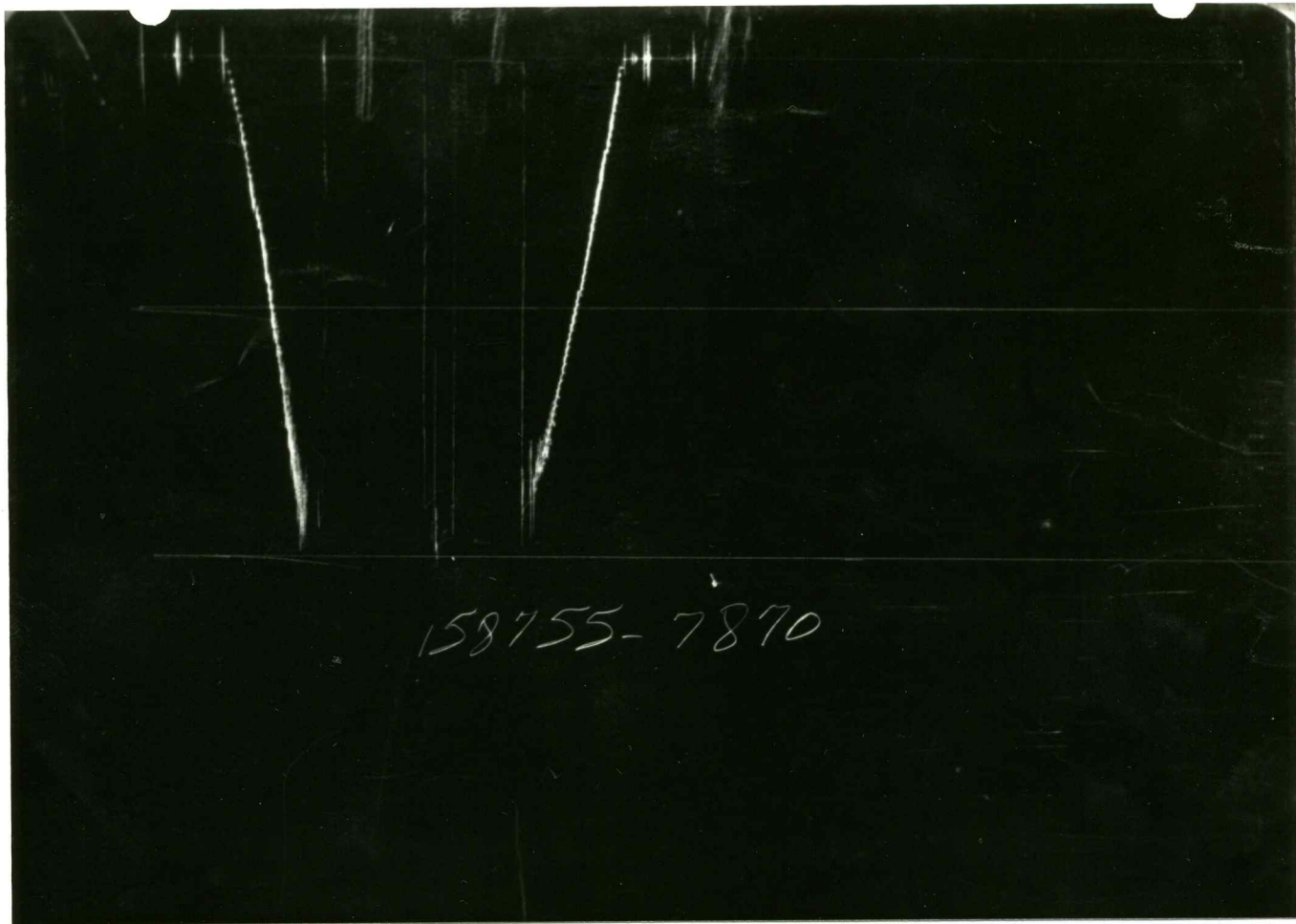
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Casing perms. _____ Bottom choke _____ Surf. temp. _____ °F Ticket No. 158755
 Gas gravity _____ Oil gravity _____ GOR _____
 Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
 INDICATE TYPE AND SIZE OF GAS AND LIQUID

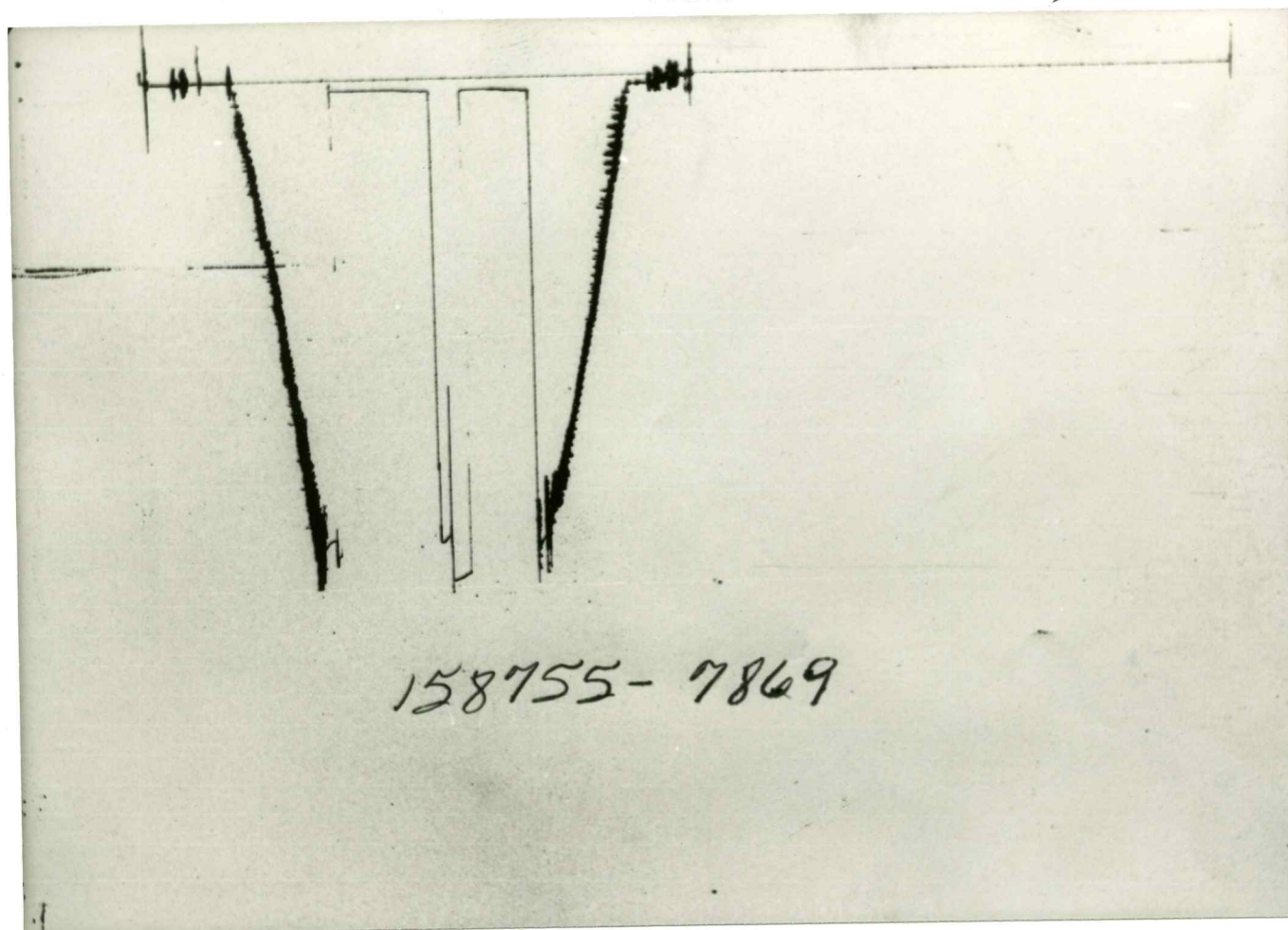
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED

[illegible]

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	4.5"	3.826"	2458'	
Drill Collars	4.5"	2.764"	605' WEIGHT PIPE	
Reversing Sub	5.75"	2.75"	1'	3293'
Water Cushion Valve				
Drill Pipe				
Drill Collars				
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	3350'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	3366'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	3368'
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	4'	3373'
Distributor				
Packer Assembly	6.75"	1.53"	4'	3377'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	3.84"	30'	
	5"	3.75"	1.5'	3409' TEMP.
Blanked-Off B.T. Running Case	5"	2.44"	4'	3411'
Total Depth				3414'



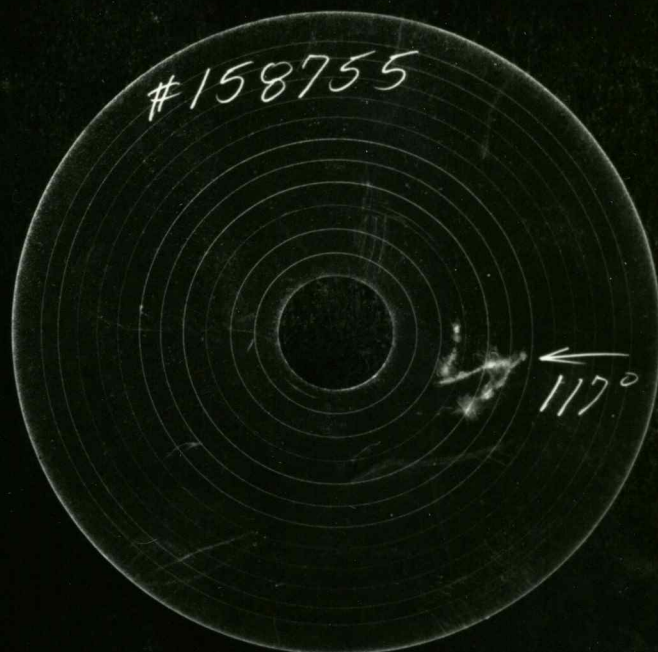
158755-7870



158755-7869

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

TEMPERATURE RECORDER CHART



10° each circle

- 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_{or} = 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.

BEMIS

Lease Name

1-20

Well No.

3

Test No.

3420 - 3480'

Tested Interval

GRAHAM MICHAELIS CORPORATION

Lease Owner/Company Name

Legal Location
Sec. - Twp. - Rng.

20 13S 19W

Field
Area

WEST YOSEMITO

County

ELLIS

State

KANSAS

FLUID SAMPLE DATA				Date 7-20-81		Ticket Number 158756	
Sampler Pressure _____ P.S.I.G. at Surface				Kind of D.S.T. OPEN HOLE		Halliburton Location HAYS	
Recovery: Cu. Ft. Gas _____				Tester SCHNEIDLER		Witness S. SPRADLING	
cc. Oil _____				Drilling Contractor ABERCROMBIE #4 PW/sm			
cc. Water _____				EQUIPMENT & HOLE DATA			
cc. Mud _____				Formation Tested Lansing-Kansas City			
Tot. Liquid cc. _____				Elevation 2090' Kelly bushing Ft.			
Gravity _____ ° API @ _____ ° F.				Net Productive Interval - Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Kelly bushing			
RESISTIVITY _____ CHLORIDE CONTENT _____				Total Depth 3480' Ft.			
Recovery Water _____ @ _____ ° F. _____ ppm				Main Hole/Casing Size 7.875"			
Recovery Mud _____ @ _____ ° F. _____ ppm				Drill Collar Length 604' I.D. 2.764" WP			
Recovery Mud Filtrate _____ @ _____ ° F. _____ ppm				Drill Pipe Length 2875' I.D. 3.826"			
Mud Pit Sample _____ @ _____ ° F. _____ ppm				Packer Depth(s) 3416-3420' Ft.			
Mud Pit Sample Filtrate _____ @ _____ ° F. _____ ppm				Depth Tester Valve 3409' Ft.			
Mud Weight 10 vis 46 sec.							
TYPE		AMOUNT		Depth Back Pres. Valve		Surface Choke .25" Bottom Choke .75"	
Cushion				Ft.			
Recovered 20		Feet of mud					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks SEE PRODUCTION TEST DATA SHEET							
*See attached incremental pressure sheet							
TEMPERATURE		Gauge No. 7870		Gauge No. 7869		Gauge No.	
Depth:		3411 Ft.		3477 Ft.		Ft.	
Est. 3475' ° F.		12 Hour Clock		12 Hour Clock		TIME (00:00-24:00 hrs.)	
Actual 122 ° F.		Blanked Off no		Blanked Off yes		Tool Opened 1635	
		Pressures		Pressures		Opened Bypass 2025	
		Field Office		Field Office		Reported Computed	
Initial Hydrostatic		1809.1 1853 1853.7				Minutes Minutes	
First Period	Flow Initial	7.6 59 54.1				30 *	
	Flow Final	17.5 59 57.2				45 *	
	Closed in	744.5 783 779.7					
Second Period	Flow Initial	26.6 59 66.5				65 *	
	Flow Final	40.7 79 81.4				90 *	
	Closed in	738.6 781 776.4					
Third Period	Flow Initial						
	Flow Final						
	Closed in						
Final Hydrostatic		1808.6 1853 1869.8					

Casing perms. _____ Bottom choke _____ Surf. temp. _____ °F Ticket No. 158756
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED

[illegible]

Lease Owner/Company Name

Ticket Number

Page 1

B.T. 7870

B.T. 7869

B.T. _____

Depth 3411'

Depth 3477'

Depth _____

INITIAL FLOW

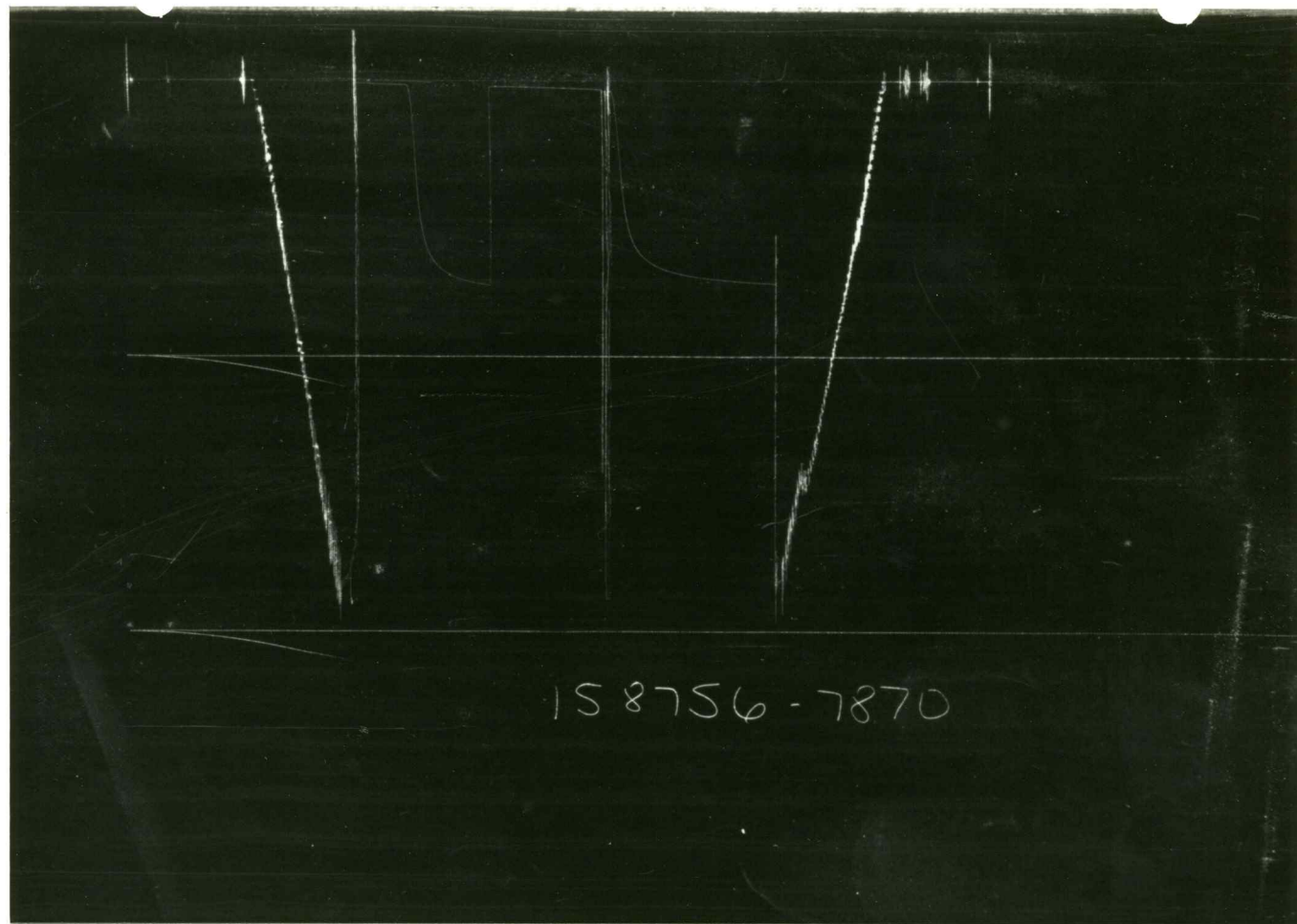
INITIAL FLOW					
Time (minutes)	Log $\frac{t + ()}{()}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t + ()}{()}$	PSIG Temp. Corr.
0		7.6	0		54.1
5		10.3	5		52.7
10		12.7	10		54.2
15		14.4	15		56.3
20		15.5	20		56.2
25		16.4	25		56.2
28.8		17.5	28.8		57.2
INITIAL CLOSED IN PRESSURE					
0		17.5	0		57.2
3		176.4	3		207.6
6		481.9	6		515.5
9		588.9	9		620.7
12		639.1	12		669.9
15		668.4	15		701.5
18		686.9	18		720.8
21		701.0	21		734.5
24		711.1	24		745.1
27		718.8	27		753.1
30		725.7	30		760.1
33		730.4	33		765.3
36		735.3	36		770.3
39		738.3	39		773.7
42		741.7	42		778.4
44.7		744.5	44.4		779.7
SECOND FLOW					
0		26.6	0		66.5
10		21.9	10		62.7
20		23.4	20		64.4
30		26.2	30		65.0
40		28.5	40		69.3
50		30.4	50		71.9
60		33.5	60		74.3
62.2 -BB		33.5	62.4-BB		74.3
65.7 -AB		40.7	64.2-AB		79.8
67.4		40.7	68.0		81.4

Remarks: BB = Before by-passing AB = After by-passing

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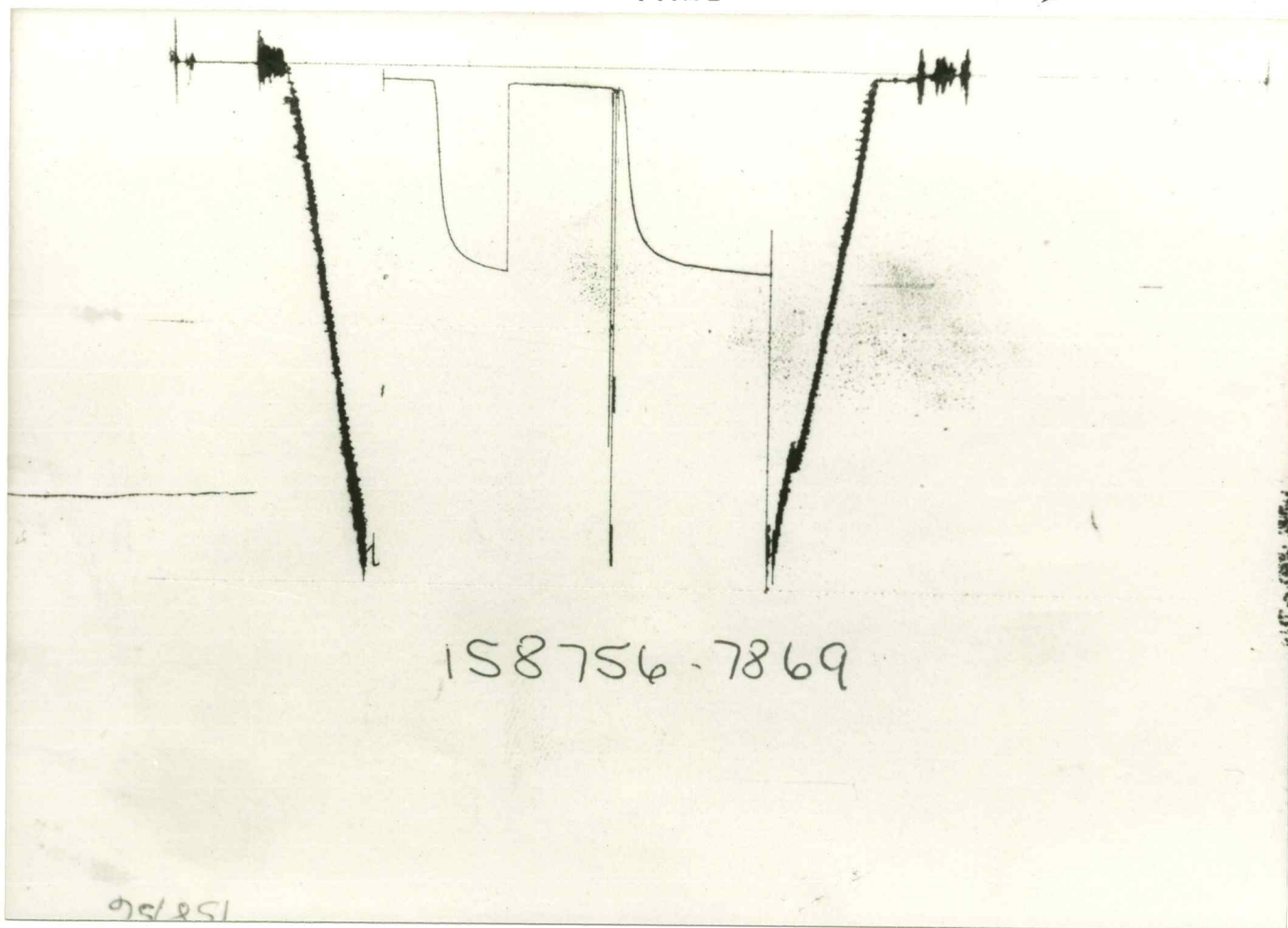
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	4.5"	3.826"	2875'	
Drill Collars				3233'
Reversing Sub	5.75"	2.75"	1'	
Water Cushion Valve				
Drill Pipe	4.5"	2.764"	604' weight pipe	
Drill Collars				
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	3403'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	3409'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	3411'
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	4'	3416'
Distributor				
Packer Assembly	6.75"	1.53"	4'	3420'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Pipe	4.5"	3.826"	31'	
Drill Collars				
Flush Joint Anchor	5"	3.84"	22'	
HT 500	5"	3.75"	1.5'	3475'
Blanked-Off B.T. Running Case	5"	2.44"	4'	3477'
Total Depth				3480'

PRESSURE



158756-7870

TIME

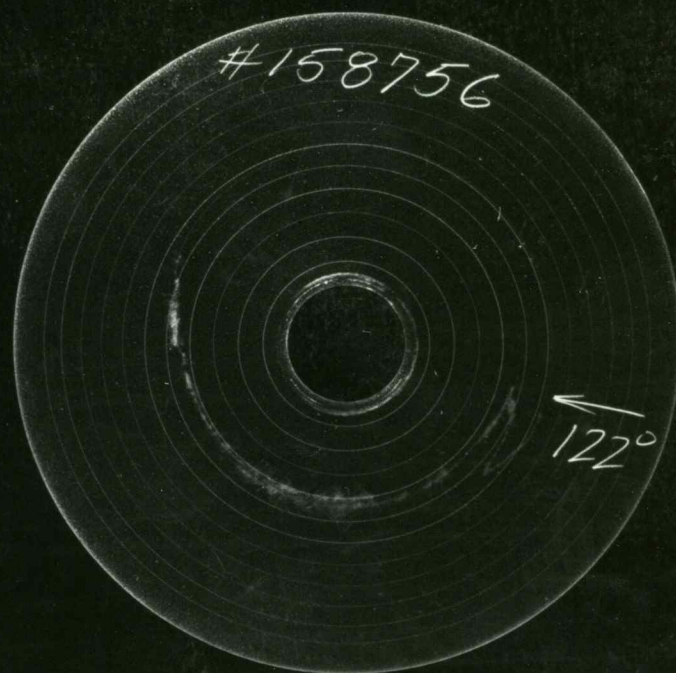


158756-7869

158756

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

TEMPERATURE RECORDER CHART



10° each circle

..... w/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_{or} = 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				Date 7-21-81		Ticket Number 158757	
Sampler Pressure _____ P.S.I.G. at Surface				Kind of D.S.T. OPEN HOLE		Halliburton Location HAYS	
Recovery: Cu. Ft. Gas _____				Tester SCHMIDLER		Witness SPRADLING	
cc. Oil _____				Drilling Contractor ABERCROMBIE DRILLING COMPANY #4 IC bi			
cc. Water _____				EQUIPMENT & HOLE DATA			
cc. Mud _____				Formation Tested Kansas City			
Tot. Liquid cc. _____				Elevation 2090' KB Ft.			
Gravity _____ ° API @ _____ °F.				Net Productive Interval 8' Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Kelly Bushing			
RESISTIVITY _____ CHLORIDE CONTENT _____				Total Depth 3503' Ft.			
Recovery Water _____ @ _____ °F. _____ ppm				Main Hole/Casing Size 7 7/8"			
Recovery Mud _____ @ _____ °F. _____ ppm				Drill Collar Length 604' WP I.D. 2.764"			
Recovery Mud Filtrate _____ @ _____ °F. _____ ppm				Drill Pipe Length 2955' I.D. 3.826"			
Mud Pit Sample _____ @ _____ °F. _____ ppm				Packer Depth(s) 3476' 3480' Ft.			
Mud Pit Sample Filtrate _____ @ _____ °F. _____ ppm				Depth Tester Valve 3469' Ft.			
Mud Weight 10.0 vis 46 sec.							
TYPE		AMOUNT		Depth Back Pres. Valve		Surface Choke .25" Bottom Choke .75"	
Cushion		Ft.					
Recovered 65		Feet of		watery mud			
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks SEE PRODUCTION TEST DATA SHEET....							
TEMPERATURE		Gauge No. 7870		Gauge No. 7869		Gauge No.	
Depth:		3471' Ft.		3500' Ft.		Depth: Ft.	
12 Hour Clock		12 Hour Clock		Hour Clock		TIME (00:00-24:00 hrs.)	
Est. °F.		Blanked Off NO		Blanked Off YES		Blanked Off	
Actual 124 °F.		Pressures		Pressures		Pressures	
		Field Office		Field Office		Field Office	
Initial Hydrostatic		1825.0 1843		1847.9			
First Period Flow Initial		20.3 39		46.1		Reported Minutes	
Final		23.2 59		46.8		Computed Minutes	
Closed in		715.7 763		734.1		30 *	
Second Period Flow Initial		34.1 59		58.1		45 *	
Final		42.4 59		65.7		90 *	
Closed in		715.6 724		735.2			
Third Period Flow Initial		*See attached incremental reading sheet....					
Final							
Closed in							
Final Hydrostatic		1855.2 1872		1885.6			

Legal Location
Sec. - Twp. - Rng.

20 13S 19W

Field Area
Med. From Tester Valve

County

ELLIS

State

KANSAS

BEMIS

Lease Name

1-20

Well No.

4

Test No.

3480' to 3503'

Tested Interval

GRAHAM-MICHAELIS CORPORATION

Lease Owner/Company Name

Casing perms. _____ Bottom choke _____ Surf. temp. _____ °F Ticket No. 158757
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED.

[illegible]

GRAHAM-MICHAELIS CORPORATION
Lease Owner/Company Name

158757
Ticket Number

B.T. 7870

B.T.

B.T. 7869

Depth 3471'

Depth

Depth 3500'

12 HOUR

12 HOUR

Time (minutes)	Log $\frac{t + t}{t}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t + t}{t}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t + t}{t}$	PSIG Temp. Corr.
FLOW PERIOD #1						FLOW PERIOD #1		
0		20.3				0		46.1
29.8		23.2				29.6		46.8
CLOSED IN PERIOD #1						CLOSED IN PERIOD #1		
0		23.2				0		46.8
3		457.7				3		491.3
6		551.4				6		572.7
9		592.2				9		611.9
12		620.6				12		641.8
15		641.0				15		661.7
18		655.6				18		677.4
21		667.9				21		688.6
24		678.2				24		698.9
27		686.4				27		705.7
30		693.5				30		712.5
33		699.3				33		718.2
36		703.9				36		722.5
39		708.9				39		727.1
42		712.2				42		730.8
45.3		715.7				45.3		734.1
FLOW PERIOD #2						FLOW PERIOD #2		
0		34.1				0		58.1
12.8	BB	32.5				12.1	BB	55.9
15.8	AB	34.9				15.5	AB	58.7
46.0		42.4				46.2		65.7
CLOSED IN PERIOD #2						CLOSED IN PERIOD #2		
0		42.4				0		65.7
6		516.6				6		535.7
12		587.5				12		608.2
18		621.0				18		643.1
24		643.9				24		664.8
30		659.2				30		679.2
36		670.9				36		691.3
42		680.1				42		699.6
48		687.7				48		707.2
(CONTINUED)						(CONTINUED)		

Remarks: BB = Before bypass AB = After bypass

GRAHAM-MICHAELIS CORPORATION	
Lease Owner/Company Name	

158757-Page #2

B.T. 7870

B.T. _____

B.T. 7869

Depth 3471'

Depth _____

Depth 3500'

12 HOUR

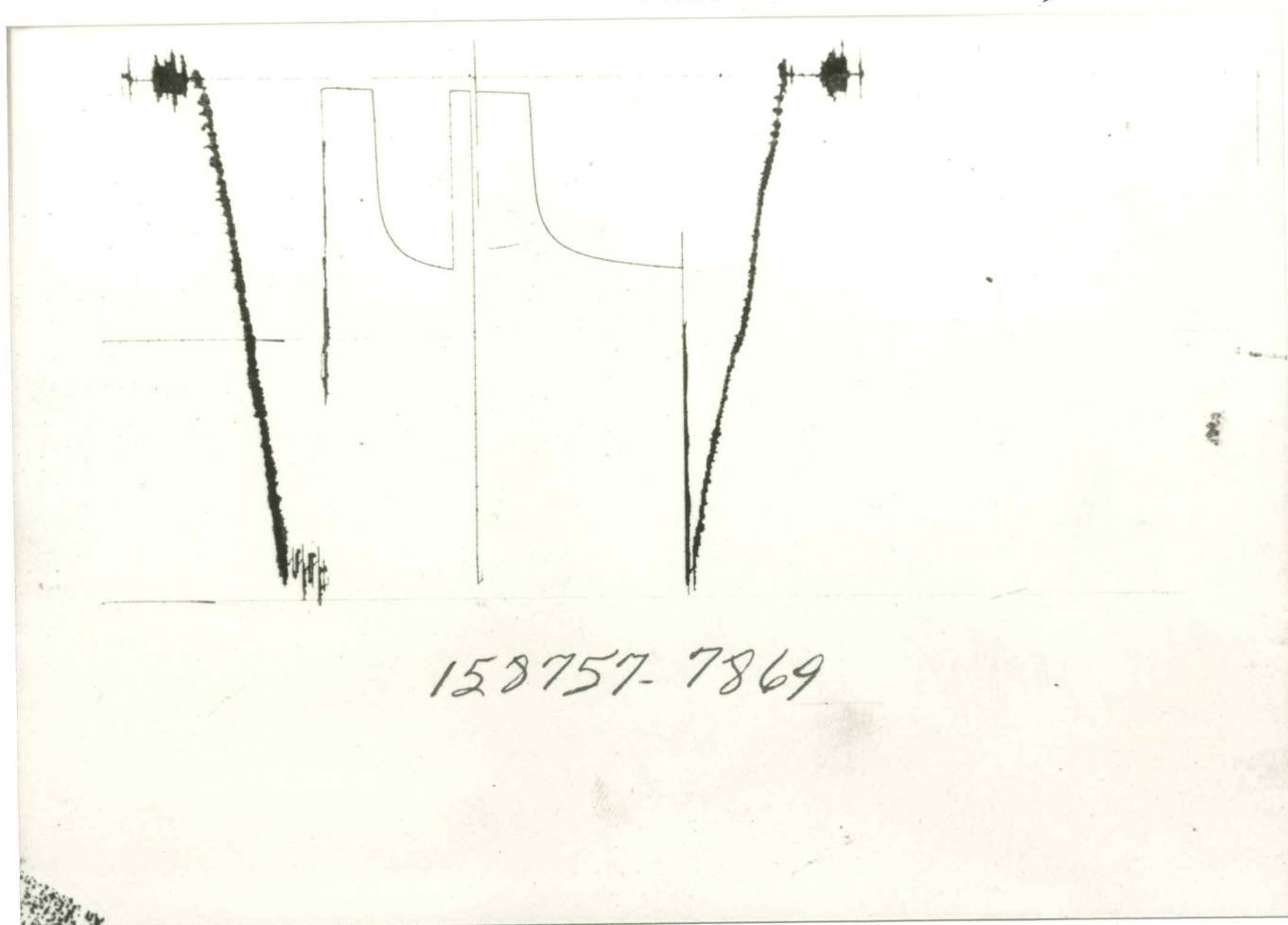
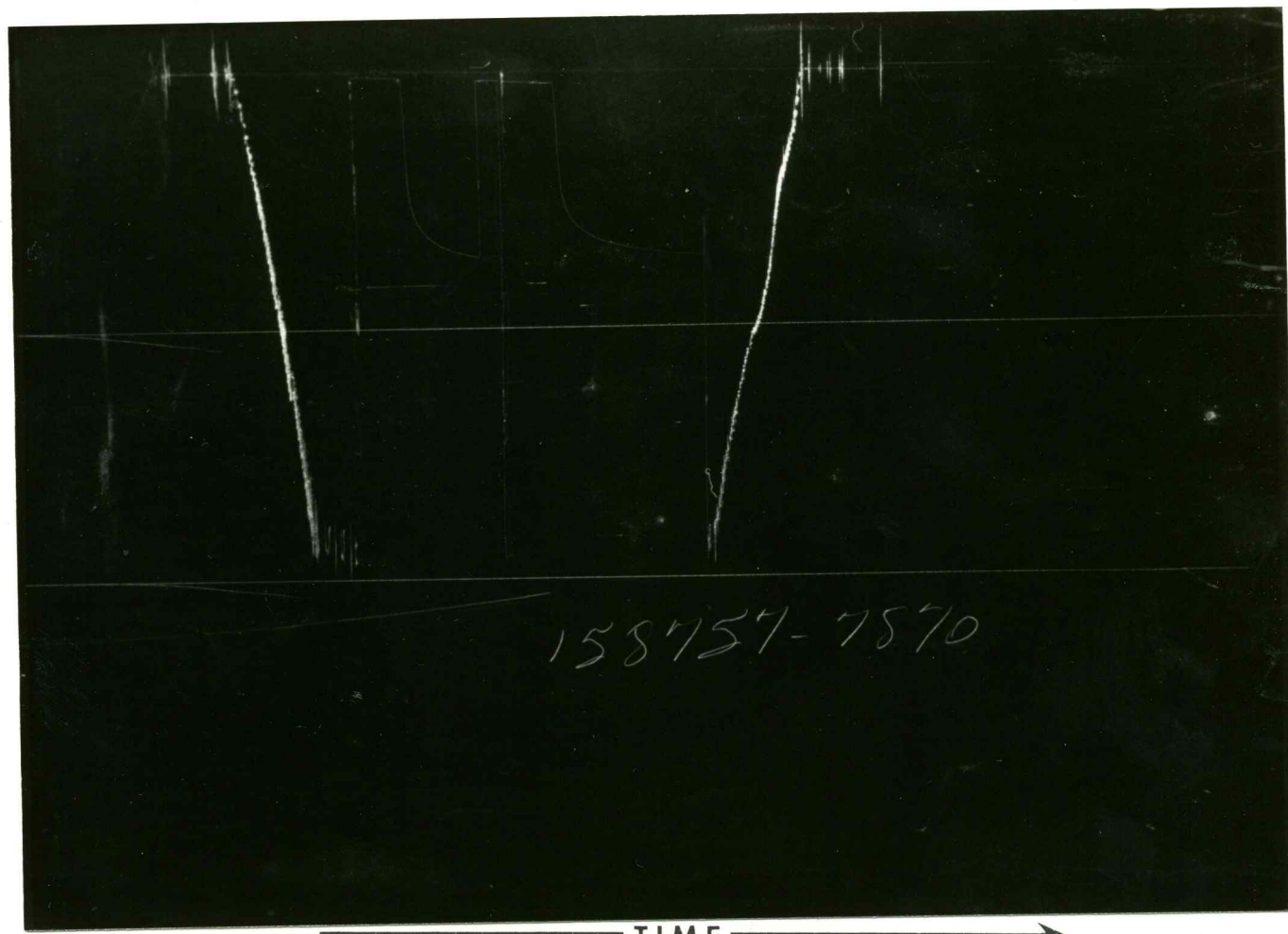
12 HOUR

[illegible]

Remarks: _____

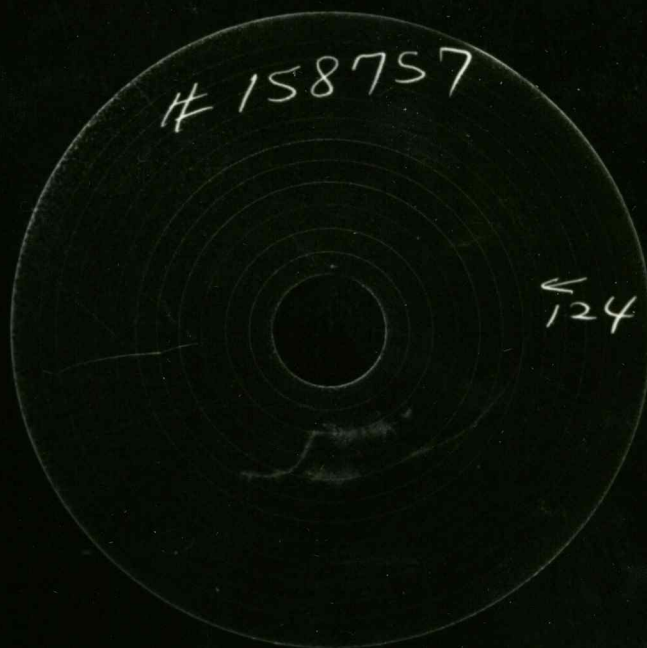
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub	5.75"	2.75"	1.00'	3396'
Water Cushion Valve				
Drill Pipe	4.50"	3.826"	2955'	
Drill Collars Weight Pipe	4.50"	2.764"	604'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5.00"	.87"	6.00'	3459'
Dual CIP Sampler				
Hydro-Spring Tester	5.00"	.75"	5.00'	3469'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5.00"	3.06"	4.00'	3471'
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	4.00'	3476'
Distributor				
Packer Assembly	6.75"	1.53"	4.00'	3480'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5.00"	3.84"	16'	
HT 500	5.00"	3.75"	1.50'	3498'
Blanked-Off B.T. Running Case	5.00"	2.44"	4.00'	3500'
Total Depth				3503'

↓
PRESSURE
↓



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

TEMPERATURE RECORDER CHART



10° each circle

- 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.

BEMIS

Lease Name

1-20

Test No.

3530' - 3632'

Tested Interval

GRAHAM MICHAELIS CORPORATION

Lease Owner/Company Name

Legal Location
Sec. - Twp. - Rng.

20-13S-10W 19W

Field Area
Mea. From Tester Valve

County

ELLIS

State

KANSAS

FLUID SAMPLE DATA				Date 7-22-81		Ticket Number 159126	
Sampler Pressure _____ P.S.I.G. at Surface				Kind of D.S.T. OPEN HOLE		Halliburton Location HAYS	
Recovery: Cu. Ft. Gas _____				Tester L. DINKEL		Witness MR. SPRADLIN	
cc. Oil _____				Drilling Contractor ABERCROMBIE #4 SM-VT			
cc. Water _____				EQUIPMENT & HOLE DATA			
cc. Mud _____				Formation Tested Kansas City			
Tot. Liquid cc. _____				Elevation 2090' Kelly Bushing Ft.			
Gravity _____ ° API @ _____ ° F.				Net Productive Interval 6' Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Kelly Bushing			
RESISTIVITY				Total Depth 3632' Ft.			
CHLORIDE CONTENT				Main Hole/Casing Size 7.875"			
Recovery Water _____ @ _____ ° F. _____ ppm				WEIGHT PIPE 604' I.D. 2.764"			
Recovery Mud _____ @ _____ ° F. _____ ppm				Drill Pipe Length 2858' I.D. 3.826"			
Recovery Mud Filtrate _____ @ _____ ° F. _____ ppm				Packer Depth(s) 3526' - 3530' Ft.			
Mud Pit Sample _____ @ _____ ° F. _____ ppm				Depth Tester Valve 3519' Ft.			
Mud Pit Sample Filtrate _____ @ _____ ° F. _____ ppm							
Mud Weight 9.8 vis 43 sec.							
Cushion		TYPE	AMOUNT	Depth Back Pres. Valve	Surface Choke	Bottom Choke	
Recovered 315			Feet of Drilling mud-no oil show		.25"	.75"	
Recovered 252			Feet of Very slightly oil cut mud			4% oil-10% mud-86% water	
Recovered 145			Feet of Slightly oily and gassy cut mud			15% oil-10% mud-75% water	
Recovered			Feet of				
Recovered			Feet of				
Remarks -SEE PRODUCTION TEST DATA SHEET-							
*-See attached incremental pressure sheet							
TEMPERATURE		Gauge No. 7870	Gauge No. 7869	Gauge No.	TIME		
Depth: 3521' Ft.		Depth: 3529' Ft.	Depth:	(00:00-24:00 hrs.)			
3627' Est. 124 °F.		12 Hour Clock	12 Hour Clock	Hour Clock			Tool
Blanked Off NO		Blanked Off YES	Blanked Off				Opened 0440
Actual °F.		Pressures	Pressures	Pressures			Opened
		Field	Office	Field	Office	Field	Office
Initial Hydrostatic			1889.3	1930	1948.9		
First Period	Flow Initial		20.4	79	86.7		
	Flow Final		200.2	255	261.0		
	Closed in		1184.1	1231	1243.7		
Second Period	Flow Initial		222.4	275	289.3		
	Flow Final		378.6	431	433.6		
	Closed in		1200.2	1231	1249.5		
Third Period	Flow Initial						
	Flow Final						
	Closed in						
Final Hydrostatic			1878.6	1891	1936.8		

Casing perms. _____ Bottom choke _____ Surf. temp. _____ °F Ticket No. 159126
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED

[illegible]

GRAHAM MICHAELIS CORPORATION
Lease Owner/Company Name

159126
Ticket Number

B.T. 7870

B.T. 7869

B.T. _____

Depth 3521'

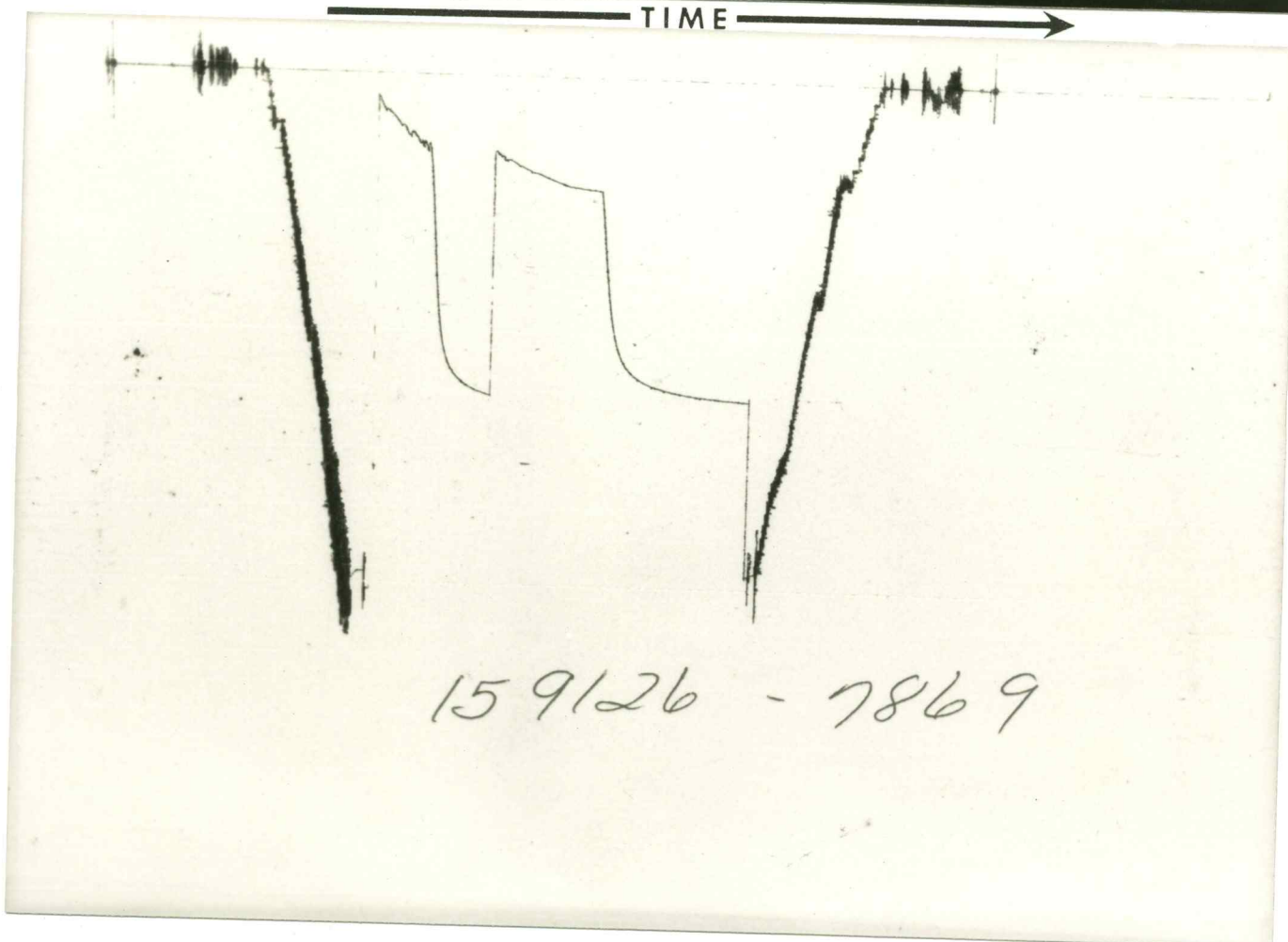
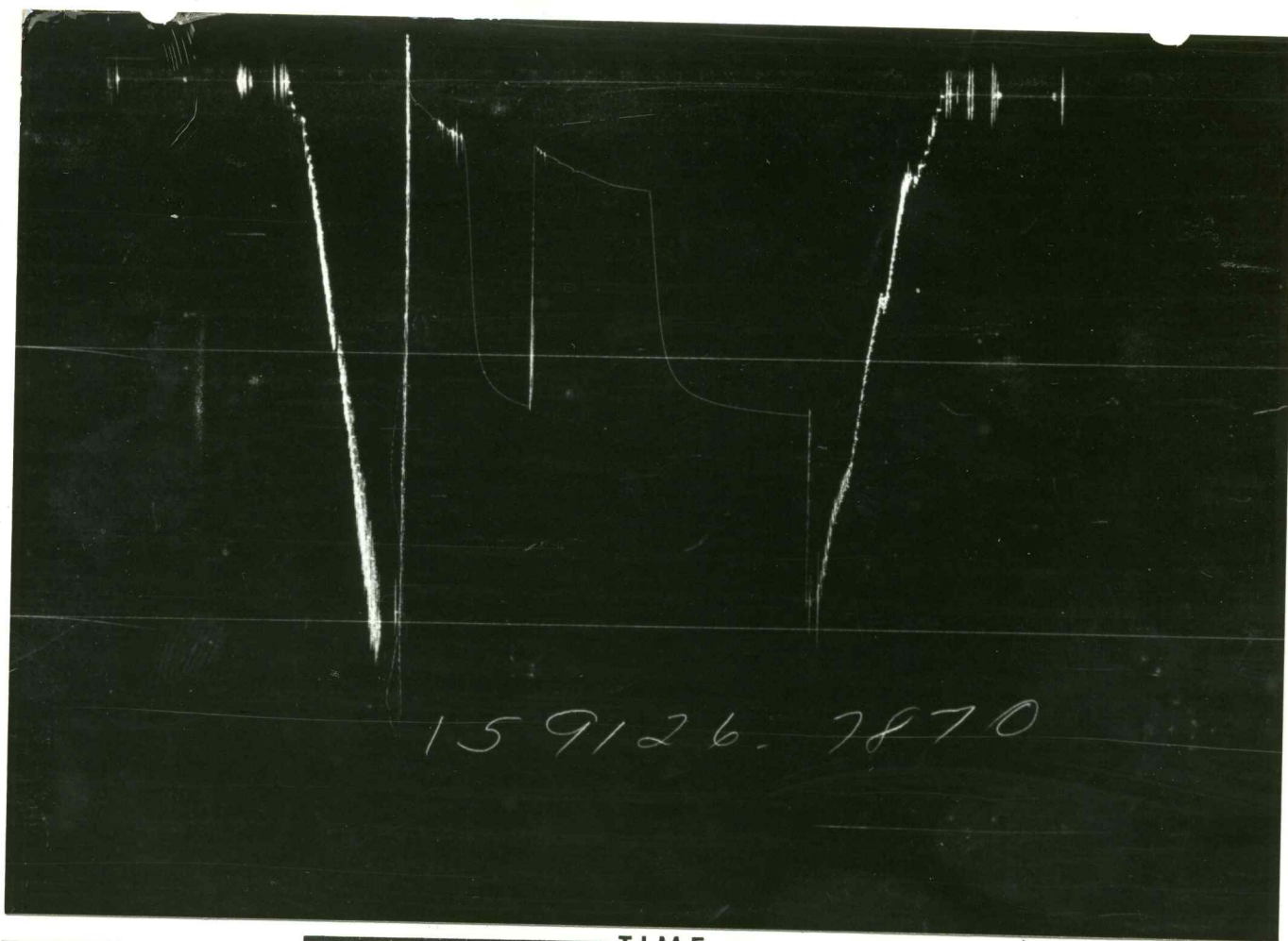
Depth 3629'

Depth _____

Time (minutes)	Log $\frac{t + 0}{t}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t + 0}{t}$	PSIG Temp. Corr.	Time (minutes)	Log $\frac{t + 0}{t}$	PSIG Temp. Corr.
First flow period			First flow period					
0		20.4	0		86.7			
5		74.1	5		137.0			
10		94.9	10		162.8			
15		125.1	15		194.7			
20		150.7	20		223.4			
25		168.2	25		259.4			
30		191.7	30		283.0			
30.5		200.2	31.0		261.0			
First CIP			First CIP					
0		200.2	0		261.0			
3		350.2	3		480.3			
6		688.7	6		814.4			
9		929.2	9		1009.6			
12		1029.8	12		1097.8			
15		1079.1	15		1142.5			
18		1108.7	18		1170.0			
21		1128.3	21		1189.2			
24		1143.2	24		1204.1			
27		1154.5	27		1215.3			
30		1164.1	30		1224.6			
33		1171.7	33		1230.9			
36		1178.6	36		1237.8			
39.3		1184.1	39.2		1243.7			
Second flow period			Second flow period					
0		222.4	0		289.3			
10		260.0	10		324.1			
20		296.2	20		357.0			
30		322.7	30		382.0			
40		350.0	40		407.2			
50		366.0	50		422.5			
64.2		378.6	64.2		433.6			
Second CIP			Second CIP					
0		378.6	0		433.6			
6		806.4	6		856.6			
12		1017.8	12		1061.5			
18		1088.0	18		1133.6			
24		1121.2	24		1168.6			
30		1140.5	30		1189.3			
36		1154.0	36		1202.5			
42		1164.1	42		1213.7			

Remarks: _____

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	4.5"	3.826"	2858'?	
Drill Collars				
Reversing Sub	5.75"	2.75"	1'	3445'
Water Cushion Valve				
Drill Pipe WEIGHT PIPE	4.5"	2.764"	604'	
Drill Collars				
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	3513'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	3519'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	3521'
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	4'	3526'
Distributor				
Packer Assembly	6.75"	1.53"	4'	3530'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
DRILL PIPE	4.5"	3.826"	64'	
Drill Collars				
Flush Joint Anchor	5"	3.84"	31'	
HT-500	5"	3.75"	1.5'	3627'
Blanked-Off B.T. Running Case	5"	2.44"	4'	3629'
Total Depth				3632'



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

TEMPERATURE RECORDER CHART



10° each circle

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_{or}	= 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.