FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 4
Zone Tested: Marmaton
Lease Name: #1 Wingate
Location: Sec. 21 Twp. 21S Rng. 35W
County Kearney St. Kansas

Company: Thunderbird Drilling Co.
Company Address: P.O. Box 18407, Wichita, Ks. 67218
Company Representative: Mr. Stanton Cox
Contractor: Thunderbird Rig #1

Date: 04/23/85
Elevation: 3152 KB
Tester: Mr. John L. Schmeidler
Interval Tested: 4560'-4591'

Internal Recorder-Type: AK-1 Range: 4200' No: 7432 Depth: 4591'
External Recorder-Type: AK-1 Range: 4000' No: 13754 Depth: 4561'

Initial Hydrostatic Mud: ___P.S.I. 2340

Initial Flow Pressure 59 To 275 P.S.I.
Initial Shut-In Pressure 521 P.S.I.
Final Flow Pressure 289 To 433 P.S.I.
Final Shut-In Pressure 521 P.S.I.
Final Hydrostatic Mud 2315 P.S.I.

Initial Flow Period 30 Min.
Initial Shut-In 45 Min.
Final Flow Period 60 Min.
Final Shut-In 45 Min.

Temperature: 116° Tool Open: 6:01 pm
Mud Weight 9.4 Viscosity 52 Water Loss 6.0
Total Depth: 4591'
Anchor Length: 31'
Bottom Packer: 4560'
Top Packer: ----
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4½" FH
Collars Run: -- I.D. --
Main Hole Size: 7 7/8"

Blow: Immediate strong blow increasing to 14" blow first opening. Weaker 10" blow second opening. Weak return 2nd shut-in.

Remarks

Wt. Pipe Run: 640' I.D. 2.75
Rubber Size: 6 5/8"

1010 Feet Total Recovery

Recovered 60 Feet oil cut gassy water; 20% gas, 20% oil, 60% water
Recovered 950' Feet gassy salt water; 57,600 p.p.m. cl
Recovered ___ Feet
Recovered ___ Feet

Extra Equipment: Jars, safety joint
Price of Job: $910.00

FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 4
Zone Tested: Marmaton
Lease Name: #1 Wingate
Location: Sec. 21 Twp. 21 Rng. 35
County Kearny St. Ks.
Date: 4/23/85
Elevation: 3152 K.B.
Tester John L. Schmeidler

Company: Thunderbird Drilling
Company Address: —
Company Representative: Mr. Stanton Cox
Contractor: Thunderbird Rig #1 Interval Tested: 4560' - 4591'
Internal Recorder-Type: AK-1 Range: 4200 No: 7432 Depth: 4591'
External Recorder-Type: AK-1 Range: 4000 No: 13754 Depth: 4561'
Initial Hydrostatic Mud 2340 P.S.I.
Initial Flow Pressure 59 To 275 P.S.I.
Initial Shut-In Pressure 521 P.S.I.
Final Flow Pressure 289 To 433 P.S.I.
Final Shut-In Pressure 521 P.S.I.
Final Hydrostatic Mud 2315 P.S.I.
Temperature: 116° Tool Open: 6:01 P.M.
Mud Weight 9.4 Viscosity 52 Water Loss 6.0
Total Depth: 4591'
Anchor Length: 31'
Bottom Packer: 4560'
Top Packer: —
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4 1/2" F.H.
Collars Run: — I.D. —
Main Hole Size: 7 7/8"

Initial Flow Period 30 Min.
Initial Shut-In 45 Min.
Final Flow Period 60 Min.
Final Shut-In 45 Min.

Blow: Immediate strong blow increasing to 14" blow first opening.
Remarks Weaker 10" blow second opening. Weak return 2nd shut-in.

Wt. Pipe Run: 640' I.D. 2.75
Rubber Size: 6 5/8"

1010' Feet Total Recovery

Recovered 60 Feet Oil cut gassy water, 20% gas, 20% oil, 60% water
Recovered 950' Feet Gassy salt water, 57,600 ppm Cl⁻
Recovered — Feet —
Recovered — Feet —

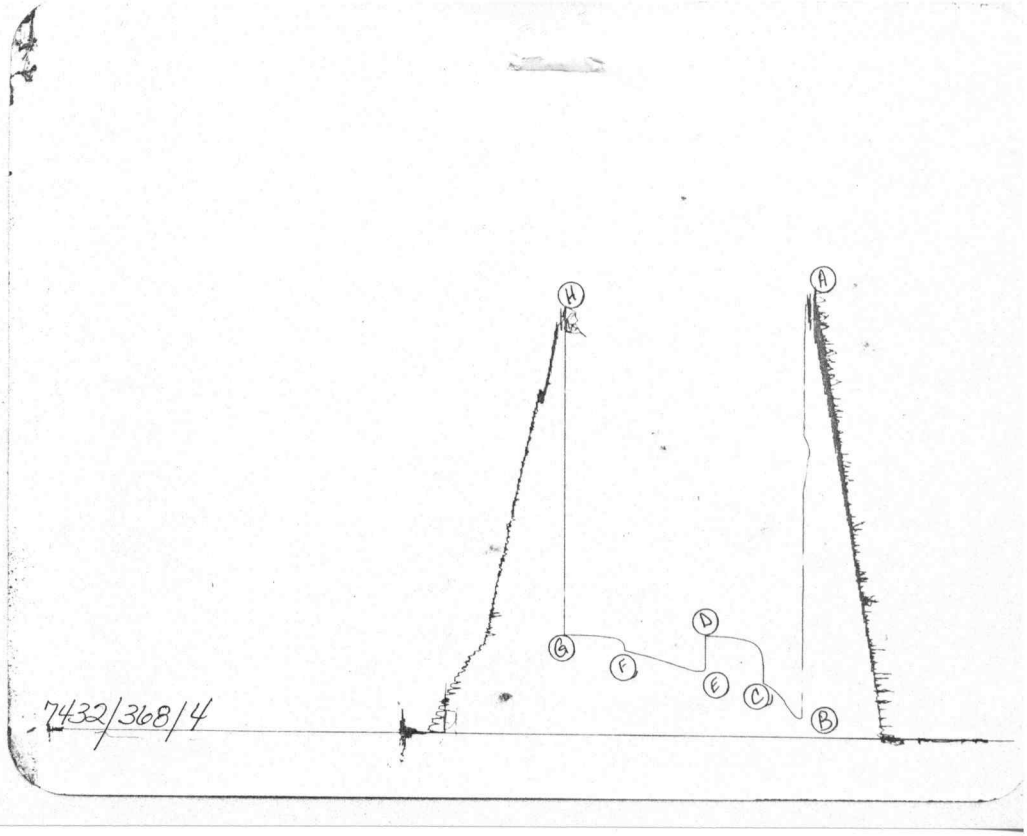
Extra Equipment: Jars, safety jt
Price of Job: 910.00

Stanton Cox
Approved By

John L. Schmeidler
Our Representative

Formation Testing Service Inc. shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained directly or indirectly through the use of its equipment, of its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid at cost by the party for whom the test is made.

Ticket No 368


H
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7432/368/4

FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 3
Zone Tested: Marmaton
Lease Name: #1 Wingate
Location: Sec. 21 Twp. 21S Rng. 35W
County Kearney St. Kansas
Date: 04/23/85
Elevation: 3152 KB
Tester: Mr. John L. Schmeidler

Company: Thunderbird Drilling Co.
Company Address: P.O.Box 18407, Wichita, Ks. 67218
Company Representative: Mr. Stanton Cox
Contractor: Thunderbird Rig #1
Interval Tested: 4534'-4557'

Internal Recorder-Type: AK-1 Range: 4200' No: 7432 Depth: 4557'
External Recorder-Type: AK-1 Range: 4000' No: 13754 Depth: 4535'
Initial Hydrostatic Mud: ___P.S.I. 2228

Initial Flow Pressure 17 To 17 P.S.I.
Initial Shut-In Pressure 49 P.S.I.
Final Flow Pressure 17 To 17 P.S.I.
Final Shut-In Pressure 39 P.S.I.
Final Hydrostatic Mud 2218 P.S.I.

Initial Flow Period 30 Min.
Initial Shut-In 30 Min.
Final Flow Period 30 Min.
Final Shut-In 30 Min.

Temperature: 110° Tool Open: 3:40 am
Mud Weight 9.4 Viscosity 48 Water Loss 6.0
Total Depth: 4557'
Anchor Length: 23'
Bottom Packer: 4534'
Top Packer: ----
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4½" FH
Collars Run: -- I.D. --
Main Hole Size: 7 7/8"

Blow: No blow on initial opening. Flushed tool -weak 10 min blow after surge. No return second opening.
Remarks

Wt. Pipe Run: 640' I.D. 2.75
Rubber Size: 6 5/8"

10 Feet Total Recovery
Recovered 10 Feet drilling mud
Recovered ___ Feet
Recovered ___ Feet
Recovered ___ Feet

Extra Equipment: Jars, safety joint
Price of Job: $910.00

FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 3
Zone Tested: Marmaton
Lease Name: #1 Wingate
Location: Sec. 21 Twp. 21 Rng. 35 W
County Kearny St. Ks.
Date: 4/23/85
Elevation: 3152 K.B.
Tester: John L. Schmeidler

Company: Thunderbird Drilling
Company Address:
Company Representative: W. Stanton Cox
Contractor: Thunderbird
Interval Tested: 4534 - 4557'
Internal Recorder-Type: AK-1 Range: 4200 No: 7432 Depth: 4557'
External Recorder-Type: AK-1 Range: 4000 No: 13754 Depth: 4535'
Initial Hydrostatic Mud 2223 P.S.I.
Initial Flow Pressure 17 To 17 P.S.I.
Initial Shut-In Pressure 49 P.S.I.
Final Flow Pressure 17 To 17 P.S.I.
Final Shut-In Pressure 39 P.S.I.
Final Hydrostatic Mud 2218 P.S.I.
Temperature: 110° Tool Open: 3:40 A.M.
Mud Weight 9.4 Viscosity 48 Water Loss 6.0
Total Depth: 4557'
Anchor Length: 23'
Bottom Packer: 4534'
Top Packer: —
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4 1/2" F.H.
Collars Run: — I.D. —
Main Hole Size: 7 7/8"

Initial Flow Period 30 Min.
Initial Shut-In 30 Min.
Final Flow Period 30 Min.
Final Shut-In 30 Min.

Blow: No blow on initial opening. Flushed tool weak 10 min blow
Remarks after surge. No return on second opening.

Wt. Pipe Run: 640' I.D. 2.25
Rubber Size: 6 5/8"

10 Feet Total Recovery
Recovered 10 Feet Drilling mud
Recovered Feet
Recovered Feet
Recovered Feet
Extra Equipment: Jars, safty jt.

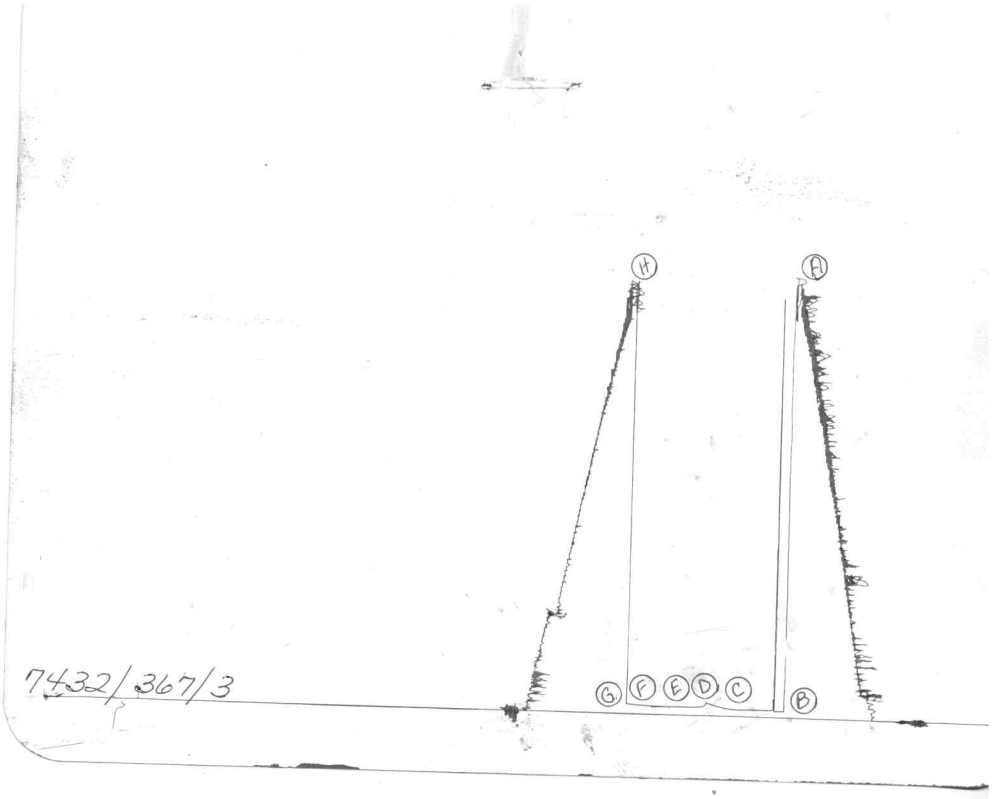
Price of Job: 910.00

Approved By
W. Stanton Cox

Our Representative
John L. Schmeidler

Ticket No 367

Formation Testing Service Inc. shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained directly or indirectly through the use of its equipment, of its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid at cost by the party for whom the test is made.



7432/367/3

FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 2
Zone Tested: Marmaton
Lease Name: Wingate #1
Location: Sec. 21 Twp. 21S Rng. 35W
County Kearney St. Kansas

Company: Thunderbird Drilling Co.
Company Address: P.O. Box 18407, Wichita, Ks. 67218
Company Representative: Mr. Stanton Cox
Contractor: Thunderbird Rig #1

Date: 04/22/85
Elevation: 3152 KB
Tester: Mr. John L. Schmeidler
Interval Tested: 4433'-4470'

Internal Recorder-Type: AK-1 Range: 4200' No: 7432 Depth: 4470'
External Recorder-Type: AK-1 Range: 4000' No: 13754 Depth: 4434'

Initial Hydrostatic Mud: P.S.I2208

Initial Flow Pressure 18 To 49 P.S.I.
Initial Shut-In Pressure 660 P.S.I.
Final Flow Pressure 83 To 98 P.S.I.
Final Shut-In Pressure 590 P.S.I.
Final Hydrostatic Mud 2197 P.S.I.

Initial Flow Period 30 Min.
Initial Shut-In 45 Min.
Final Flow Period 60 Min.
Final Shut-In 45 Min.

Temperature: Tool Open: 7:25 am
Mud Weight 9.4 Viscosity 48 Water Loss 6.0
Total Depth: 4470'
Anchor Length: 37'
Bottom Packer: 4433'
Top Packer: ---
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4½" X,H,
Collars Run: -- I.D. --
Main Hole Size: 7 7.8"

Blow: Steadily increasing to 8" blow first opening. Steadily increasing to 11" blow second opening. Weak return both shut-ins.
Remarks

Wt. Pipe Run: 640' I.D. 2.75
Rubber Size: 6 5/8"

245 Feet Total Recovery 360' gas in pipe
Recovered 90 Feet clean gassy oil; 32.6° A.P.I.
Recovered 120 Feet heavy oil cut mud; 25% gas, 45% oil, 30% mud
Recovered 35 Feet heavy mud cut oil; 25% gas, 35% oil, 40% mud
Recovered Feet

Extra Equipment: Jars, Safety joint
Price of Job: $910.00

FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 2
Zone Tested: Marmaton
Lease Name: Wingate #1
Location: Sec. 21 Twp. 21S Rng. 35W
County Kearney St. Ks.
Date: 4/22/85
Elevation: 3152 K.B.
Tester: John L. Schmeidler

Company: Thunderbird Drilling
Company Address:
Company Representative: W.V. Stanton Cox
Contractor: Thunderbird
Interval Tested: 4433' - 4470'

Internal Recorder-Type: AK-1 Range: 4200 No: 7432 Depth: 4470'
External Recorder-Type: AK-1 Range: 4000 No: 13754 Depth: 4434'

Initial Hydrostatic Mud 2203 P.S.I.

Initial Flow Pressure	18 To 49 P.S.I.	Initial Flow Period	30 Min.
Initial Shut-In Pressure	660 P.S.I.	Initial Shut-In	45 Min.
Final Flow Pressure	83 To 98 P.S.I.	Final Flow Period	60 Min.
Final Shut-In Pressure	590 P.S.I.	Final Shut-In	45 Min.
Final Hydrostatic Mud	2197 P.S.I.		

Temperature: Tool Open: 7:25 A.M.
Mud Weight 9.4 Viscosity 48 Water Loss 6.0
Total Depth: 4470'
Anchor Length: 37'
Bottom Packer: 4433'
Top Packer: —
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4½" X.H.
Collars Run: — I.D. —
Main Hole Size: 7⅞"

Blow: Steadily increasing to 5" blow first opening. Steadily increasing to 11"
Remarks blow second opening. Weak return both shut-ins.

Wt. Pipe Run: 640' I.D. 2.25
Rubber Size: 6⅝"

245 Feet Total Recovery 360' Gas in Pipe

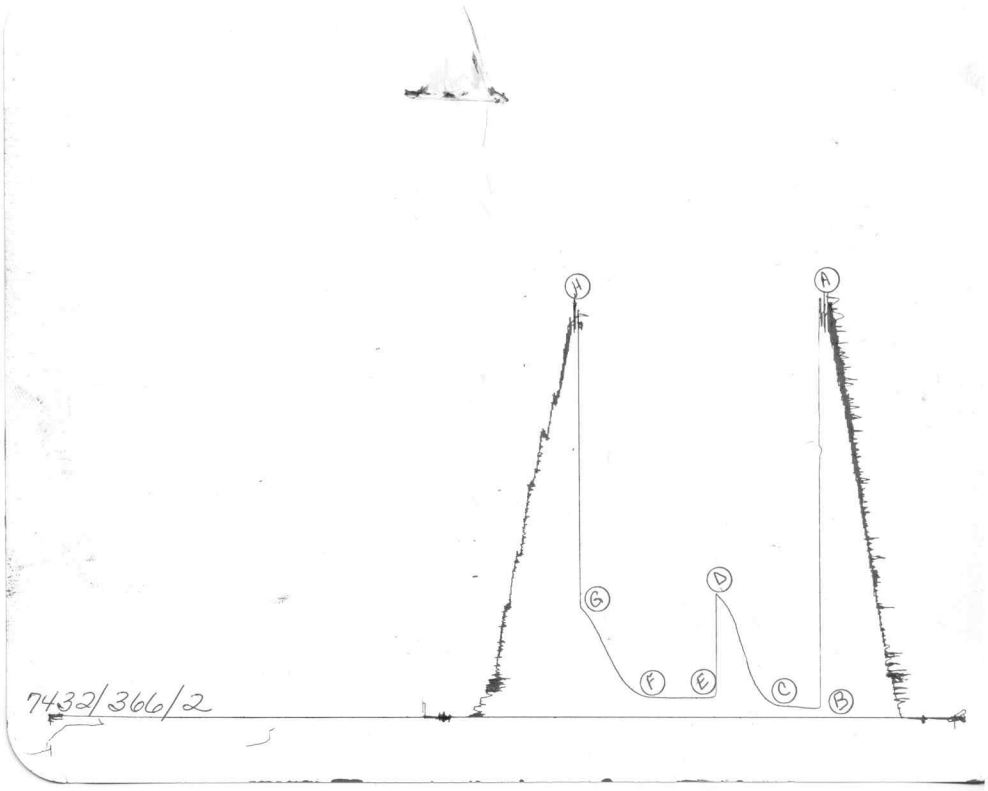
Recovered 90 Feet Clean gassy oil, 32.6° A.P.I.
Recovered 120' Feet Heavy oil cut mud, 25% gas 45% oil, 30% mud.
Recovered 35' Feet Heavy mud cut oil, 25% gas, 35% oil, 40% mud
Recovered Feet
Extra Equipment: Jars, safety jt.
Price of Job: 910.00

Stanton Cox
Approved By

John L. Schmeidler
Our Representative

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Ticket No 366


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7432/366/2

FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 1
Zone Tested: Kansas City
Lease Name: Wingate #1
Location: Sec. 21 Twp. 21S Rng. 35W
County Kearney St. Kansas

Company: Thunderbird Drilling Co.
Company Address: P.O. Box 18407, Wichita, Ks. 67218
Company Representative: Mr. Stanton Cox
Contractor: Thunderbird Rig #1

Date: 04/21/85
Elevation: 3152 KB
Tester: Mr. John L. Schmeidler
Interval Tested: 4378'-4410'

Internal Recorder-Type: AK-1 Range: 4200' No: 7432 Depth: 4410'
External Recorder-Type: AK-1 Range: 4000' No: 13754 Depth: 4379'

Initial Hydrostatic Mud: ___P.S.I. 2238

Initial Flow Pressure 114 To 749 P.S.I.
Initial Shut-In Pressure 1186 P.S.I.
Final Flow Pressure 761 To 1106 P.S.I.
Final Shut-In Pressure 1181 P.S.I.
Final Hydrostatic Mud 2219 P.S.I.

Initial Flow Period 30 Min.
Initial Shut-In 45 Min.
Final Flow Period 60 Min.
Final Shut-In 45 Min.

Temperature: 123° Tool Open: 2:19 pm
Mud Weight 9.4 Viscosity 42 Water Loss 16.4
Total Depth: 4410'
Anchor Length: 32'
Bottom Packer: 4378'
Top Packer: ___
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4½"
Collars Run: --- I.D. ---
Main Hole Size: 7 7.8"

Blow: Steadily increasing to 50" blow first 25 mins.; decreasing to 46" blow at 30 mins. Much weaker 20" second opening
Remarks steadily decreasing to 11" blow. No return on shut-ins

Wt. Pipe Run: 640' I.D. 2.75
Rubber Size: 6 5/8"

2550 Feet Total Recovery

Recovered 2550 Feet sulfur water; 36,400 p.p.m. cl
Recovered ___ Feet ___
Recovered ___ Feet ___
Recovered ___ Feet ___

Extra Equipment: Jars, safety joint
Price of Job: $910.00

FORMATION TESTING SERVICE

P.O.Box 518, Hays, Kansas 67601
Telephone (913) 628-1115

Test# 1
Zone Tested: Kansas City
Lease Name: Wingate #1
Location: Sec. 21 Twp. 21S Rng. 35W
County: Kearny St. Ks.
Date: 4/21/85
Elevation: 3152 K.B.
Tester: John L. Schmeidler

Company: Thunderbird Drilling
Company Address:
Company Representative: Mr. Stanton Cox
Contractor: Thunderbird Interval Tested: 4378' -4410'
Internal Recorder-Type: AK-1 Range: 4200 No: 7432 Depth: 4410'
External Recorder-Type: AK-1 Range: 4000 No: 13735-4 Depth: 4379'
Initial Hydrostatic Mud ~~2233~~ P.S.I.

Initial Flow Pressure	114 To 749 P.S.I.		Initial Flow Period	30	Min.
Initial Shut-In Pressure	1186 P.S.I.		Initial Shut-In	45	Min.
Final Flow Pressure	761 To 1106 P.S.I.		Final Flow Period	60	Min.
Final Shut-In Pressure	1181 P.S.I.		Final Shut-In	45	Min.
Final Hydrostatic Mud	2219 P.S.I.				

Temperature: 123° Tool Open: 2:19 P.M.
Mud Weight 9.4 Viscosity 42 Water Loss 16.4
Total Depth: 4410'
Anchor Length: 32'
Bottom Packer: 4378
Top Packer:
Surface Choke: 1"
Bottom Choke: 3/4"
Drill Pipe Size: 4 1/2"
Collars Run: — I.D. —
Main Hole Size: 7 7/8"

Blow: Steadily increasing to 50" blow first 25 minutes; decreasing to
Remarks 46" blow at 30 minutes. Much weaker 20" second opening steadily decreasing to 11" blow. No return on shut-in.

Wt. Pipe Run: 640' I.D. 2.25
Rubber Size: 6 5/8"

2550 Feet Total Recovery

Recovered 2550 Feet Sulfur water 36,400 p.p.m Cl'
Recovered Feet
Recovered Feet
Recovered Feet

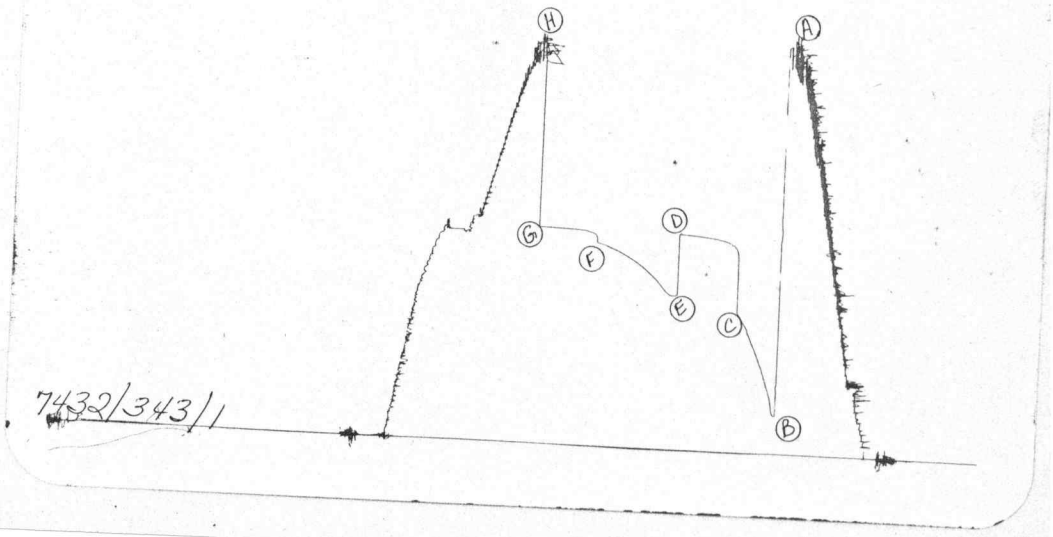
Extra Equipment: Jars, safety jt. Price of Job: 910.00

Stanton Cox
Approved By

John L. Schmeidler
Our Representative

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Ticket No. 343


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7432/3431