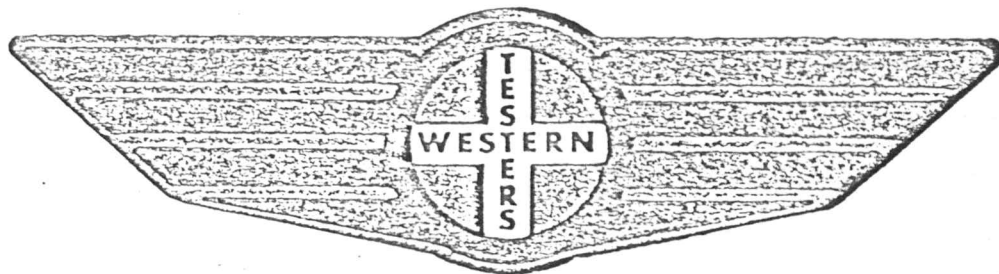


FORMATION

TEST

REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

WESTERN TESTING CO. INC.
SUBSURFACE PRESSURE SURVEY

DATE: 8-21-85
CUSTOMER: RAINS & WILLIAMSON OIL CO INC
WELL: 2 TEST: 1
ELEVATION (KB): 1527 FORMATION: MISSISSIPPI
SECTION: 19 TOWNSHIP: 25S
RANGE: 8E COUNTY: BUTLER STATE: KANSAS
GAUGE SN #5666 RANGE: 3950 CLOCK: 12

INTERVAL TEST FROM: 2747 FT TO: 2760 FT TOTAL DEPTH: 2760 FT
DEPTH OF SELECTIVE ZONE: FT
PACKER DEPTH: 2742 FT SIZE: 6 3/4 IN PACKER DEPTH: 2747 FT SIZE: 6 3/4 IN
PACKER DEPTH: FT SIZE: IN PACKER DEPTH: FT SIZE: IN

DRILLING CONTRACTOR: RAINS/WILLIAMSON #4
MUD TYPE: CHEMICAL VISCOSITY: 39
WEIGHT: 9.1 WATER LOSS (CC):

CHLORIDES (P.P.M.):
JARS - MAKE: SERIAL NUMBER:
DID WELL FLOW? NO REVERSED OUT?

DRILL COLLAR LENGTH: 210 FT I.D.: 2.25 IN
WEIGHT PIPE LENGTH: FT I.D.: IN
DRILL PIPE LENGTH: 2517 FT I.D.: 3.8 IN
TEST TOOL LENGTH: 20 FT TOOL SIZE: 5 1/2 OD IN
ANCHOR LENGTH: 13 FT SIZE: 5 1/2 OD IN
SURFACE CHOKE SIZE: 3/4 IN BOTTOM CHOKE SIZE: 3/4 IN
MAIN HOLE SIZE: 7 7/8 IN TOOL JOINT SIZE: 4 1/2 XH IN

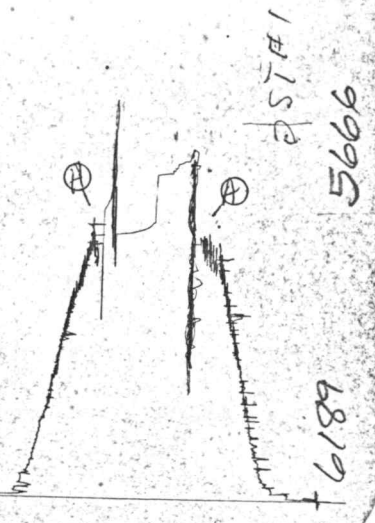
BLOW: INITIAL FLOW PERIOD WEAK BLOW FOR 7 MINUTES.

RECOVERED: 60 FT OF: MUD (FEW OIL SPOTS).
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:

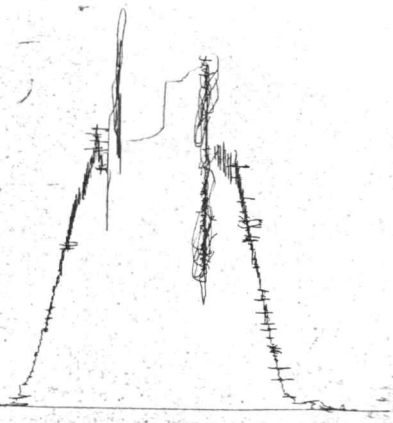
REMARKS: SLID TOOL 6 FEET TO BOTTOM.
TRIED FLUSHING TOOL ON FINAL FLOW PERIOD;
PLUGGED TOOL.

TIME SET PACKER(S): 11:00 PM TIME STARTED OFF BOTTOM: 12:10 AM
WELL TEMPERATURE: 104 °F
INITIAL HYDROSTATIC PRESSURE: (A) 1309 PSI
INITIAL FLOW PERIOD MIN: 0 (B) 0 PSI TO (C) 0 PSI
INITIAL CLOSED IN PERIOD MIN: 0 (D) 0 PSI
FINAL FLOW PERIOD MIN: 0 (E) 0 PSI TO (F) 0 PSI
FINAL CLOSED IN PERIOD MIN: 0 (G) 0 PSI
FINAL HYDROSTATIC PRESSURE (H) 1309 PSI

Kt # 6189
I



Kt # 6189
O



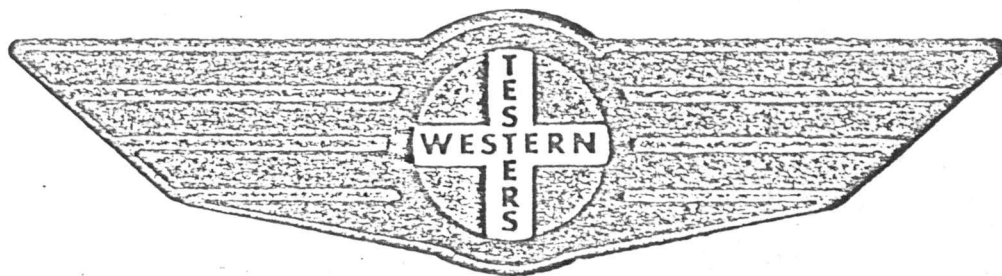
ST#1
6189

3351

FORMATION

TEST

REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

Company KALINS & WILLIAMSON ULL CO., INC. Lease & Well No. #2 KUSALLA KANCU Sec. 19 Twp. 20S Rge. 05 Test No. 4 Date 01/22/03

WESTERN TESTING CO. INC.
SUBSURFACE PRESSURE SURVEY

DATE: 8-22-85
CUSTOMER: RAINS & WILLIAMSON OIL CO INC
WELL: 2 TEST: 2
ELEVATION (KB): 1527 FORMATION: MISSISSIPPI
SECTION: 19 TOWNSHIP: 25S
RANGE: 8E COUNTY: BUTLER STATE: KANSAS
GAUGE SN #5666 RANGE: 3950 CLOCK: 12

INTERVAL TEST FROM: 2747 FT TO: 2760 FT TOTAL DEPTH: 2760 FT
DEPTH OF SELECTIVE ZONE: FT
PACKER DEPTH: 2742 FT SIZE: 6 3/4 IN PACKER DEPTH: 2747 FT SIZE: 6 3/4 IN
PACKER DEPTH: FT SIZE: IN PACKER DEPTH: FT SIZE: IN

DRILLING CONTRACTOR: RAINS/WILLIAMSON #4
MUD TYPE: CHEMICAL VISCOSITY: 55
WEIGHT: 8.8 WATER LOSS (CC): 12.0
CHLORIDES (P.P.M.): 1500
JARS - MAKE: SERIAL NUMBER:
DID WELL FLOW? NO REVERSED OUT? NO
DRILL COLLAR LENGTH: 210 FT I.D.: 2.25 IN
WEIGHT PIPE LENGTH: FT I.D.: IN
DRILL PIPE LENGTH: 2517 FT I.D.: 3.8 IN
TEST TOOL LENGTH: 20 FT TOOL SIZE: 5 1/2 OD IN
ANCHOR LENGTH: 13 FT SIZE: 5 1/2 OD IN
SURFACE CHOKE SIZE: 3/4 IN BOTTOM CHOKE SIZE: 3/4 IN
MAIN HOLE SIZE: 7 7/8 IN TOOL JOINT SIZE: 4 1/2 XH IN

BLOW: WEAK (1/2 INCH) BLOW THROUGHOUT TEST.

RECOVERED: 5	FT	OF: FREE OIL (33 SPEC. GRAVITY).
RECOVERED: 15	FT	OF: OIL CUT MUD (20% OIL; 80% MUD).
RECOVERED:	FT	OF:
RECOVERED:	FT	OF:
RECOVERED:	FT	OF:
RECOVERED:	FT	OF:
RECOVERED:	FT	OF:
RECOVERED:	FT	OF:
RECOVERED:	FT	OF:

REMARKS:

TIME SET PACKER(S): 8:45 AM	TIME STARTED OFF BOTTOM: 11:45 AM
WELL TEMPERATURE: 104 °F	
INITIAL HYDROSTATIC PRESSURE:	(A) 1337 PSI
INITIAL FLOW PERIOD MIN: 30	(B) 43 PSI TO (C) 43 PSI
INITIAL CLOSED IN PERIOD MIN: 30	(D) 886 PSI
FINAL FLOW PERIOD MIN: 60	(E) 53 PSI TO (F) 54 PSI
FINAL CLOSED IN PERIOD MIN: 63	(G) 843 PSI
FINAL HYDROSTATIC PRESSURE	(H) 1271 PSI

Liquid Production

B.T. Gauge Numbers		5666	Ticket Number	6190
Initial Hydrostatic		1337	Elevation	1527 KB ft.
Final Hydrostatic		1271	Indicated Production	1st Flow .032 bbls. day
1st Flow	Initial	43	Total Flow	.065 bbls. day
	Final	43		
Initial Closed In Pressure		886	Drill Collar Length	210 ft.
2nd Flow		53	Drill Collar I.D.	2.25 in.
2nd Flow	Initial	53	Drill Pipe Factor	.0142 bbls. ft.
	Final	54	Hole Size	7.875 in.
Final Closed In Pressure		843	Footage Tested	13 ft.
Extrapolated Static Pressure	Initial	976 - 742	Mud Weight	8.8 lbs. gal.
	Final	935 - 618	Viscosity, Oil or Water	cp
Slope psi/cycle	Initial	233.735	Oil API Gravity	—
	Final	316.412	Water Specific Gravity	—

Remarks:

SUMMARY		Gauge No.	Depth		
Product	Equation	INITIAL	FINAL	Units	
Production	$Q = \frac{1440 R}{t}$	1.573	1.575	bbls. day.	
Transmissability	$\frac{Kh}{\mu} = \frac{162.6 Q}{m}$	1.093	.808	md. ft. cp	
Indicated Flow Capacity	$Kh = \frac{Kh}{\mu} \mu$	2.623	1.939	md. ft.	
Average Effective Permeability	$K = \frac{Kh}{h}$	.524	.387	md.	
	$K_i = \frac{Kh}{h_i}$	—	—	md.	
Damage Ratio	$DR = .183 \frac{P_s - P_f}{m}$	.729	.508	—	
Theoretical Potential w/Damage Removed	$Q_1 = Q DR$	1.573	1.575	bbls. day	
Approx. Radius of Investigation	$b \approx \sqrt{Kt}$ or $\sqrt{Kt_0}$	3.967	4.824	ft.	
	$b_1 \approx \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$	—	—	ft.	
Potentiometric Surface *	$Pot. = EI - CD + 2.319 P_s$	—	—	ft.	

NOTICE: These calculations are based upon information furnished by you and taken from Drill Stem Test pressure charts, and are furnished you for your information. In furnishing such calculations and elevations based thereon, Western Testing Co., Inc. is merely expressing its opinion. You agree that Western Testing Co., Inc. makes no warranty express or implied as to the accuracy of such calculations or opinions, and that Western Testing Co., Inc. shall not be liable for any loss or damage, whether due to negligence or otherwise, in connection with such calculations and opinions.

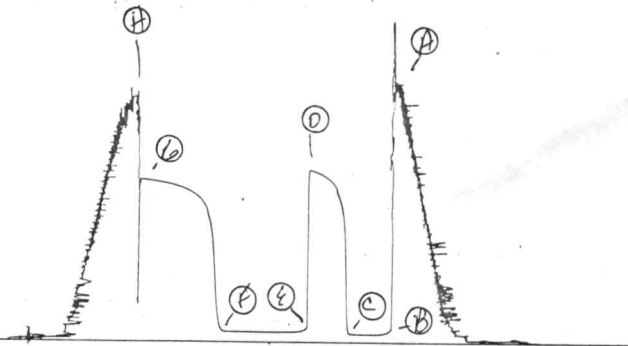
INTERPRETATIONS AND CALCULATIONS

DST#2
6190

Sta # 6190

I.

5666

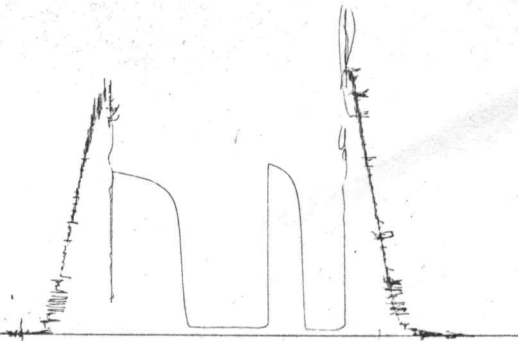


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O

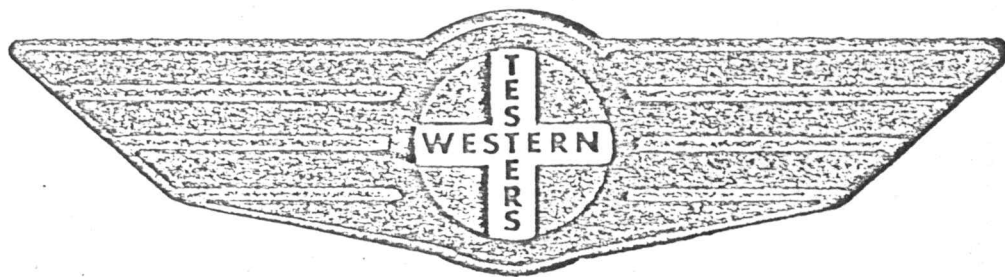
DST#2

6190

3351



REPORT



Phone (316) 262-5861

WESTERN TESTING CO. INC.
SUBSURFACE PRESSURE SURVEY

DATE: 8-22-85
CUSTOMER: RAINS & WILLIAMSON OIL CO INC
WELL: 2 TEST: 3
ELEVATION (KB): 1527 FORMATION: MISSISSIPPI
SECTION: 19 TOWNSHIP: 25S
RANGE: 8E COUNTY: BUTLER STATE: KANSAS
GAUGE SN #5666 RANGE: 3950 CLOCK: 12

INTERVAL TEST FROM: 2749 FT TO: 2764 FT TOTAL DEPTH: 2764 FT
DEPTH OF SELECTIVE ZONE: FT
PACKER DEPTH: 2744 FT SIZE: 6 3/4 IN PACKER DEPTH: 2749 FT SIZE: 6 3/4 IN
PACKER DEPTH: FT SIZE: IN PACKER DEPTH: FT SIZE: IN

DRILLING CONTRACTOR: RAINS/WILLIAMSON #4
MUD TYPE: CHEMICAL VISCOSITY: 55
WEIGHT: 8.8 WATER LOSS (CC): 12.0
CHLORIDES (P.P.M.): 1500

JARS - MAKE: SERIAL NUMBER:
DID WELL FLOW? NO REVERSED OUT? NO
DRILL COLLAR LENGTH: 210 FT I.D.: 2.25 IN
WEIGHT PIPE LENGTH: FT I.D.: IN
DRILL PIPE LENGTH: 2519 FT I.D.: 3.8 IN
TEST TOOL LENGTH: 20 FT TOOL SIZE: 5 1/2 OD IN
ANCHOR LENGTH: 15 FT SIZE: 5 1/2 OD IN
SURFACE CHOKE SIZE: 3/4 IN BOTTOM CHOKE SIZE: 3/4 IN
MAIN HOLE SIZE: 7 7/8 IN TOOL JOINT SIZE: 4 1/2 XH IN

BLOW: WEAK BLOW THROUGHOUT TEST.

RECOVERED: 15 FT OF: CLEAN OIL.
RECOVERED: 35 FT OF: OIL CUT MUD (5% OIL; 95% MUD).
RECOVERED: 30 FT OF: SLIGHTLY WATERY MUD WITH OIL SPECKS.
RECOVERED: FT OF: CHLORIDES 9000 PPM.
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:

REMARKS: (PROBABLY FILTRATE).

TIME SET PACKER(S): 7:15 PM TIME STARTED OFF BOTTOM: 10:15 PM
WELL TEMPERATURE: 104 °F
INITIAL HYDROSTATIC PRESSURE: (A) 1320 PSI
INITIAL FLOW PERIOD MIN: 30 (B) 43 PSI TO (C) 49 PSI
INITIAL CLOSED IN PERIOD MIN: 30 (D) 795 PSI
FINAL FLOW PERIOD MIN: 60 (E) 62 PSI TO (F) 71 PSI
FINAL CLOSED IN PERIOD MIN: 57 (G) 686 PSI
FINAL HYDROSTATIC PRESSURE (H) 1297 PSI

Liquid Production

B.T. Gauge Numbers		-5666-	Ticket Number	6191
Initial Hydrostatic		1320	Elevation	1527 KB ft.
Final Hydrostatic		1297	Indicated Production	1st Flow .131 bbls. day
1st Flow	Initial	43	Total Flow	.262 bbls. day
	Final	49	Drill Collar Length	210 ft.
Initial Closed In Pressure		795	Drill Collar I.D.	2.25 in.
2nd Flow	Initial	62	Drill Pipe Factor	.0142 bbls. ft.
	Final	71	Hole Size	7.875 in.
Final Closed In Pressure		686	Footage Tested	15 ft.
Extrapolated Static Pressure	Initial	961 - 543	Mud Weight	8.8 lbs. gal.
	Final	819 - 392	Viscosity, Oil or Water	cp
Slope psi/cycle	Initial	418.157	Oil API Gravity	—
	Final	427.964	Water Specific Gravity	—

Remarks:

SUMMARY		Gauge No.	Depth		
Product	Equation	INITIAL	FINAL	Units	
Production	$Q = \frac{1440 R}{t}$	6.300	6.299	bbls. day.	
Transmissibility	$\frac{Kh}{\mu} = \frac{162.6 Q}{m}$	4.304	2.398	md. ft. cp	
Indicated Flow Capacity	$Kh = \frac{Kh}{\mu} \mu$	10.331	5.757	md. ft.	
Average Effective Permeability	$K = \frac{Kh}{h}$	2.066	1.151	md.	
	$K_i = \frac{Kh}{h_i}$	—	—	md.	
Damage Ratio	$DR = .183 \frac{P_s - P_f}{m}$	.645	.320	—	
Theoretical Potential w/Damage Removed	$Q_1 = Q DR$	6.300	6.299	bbls. day	
Approx. Radius of Investigation	$b \approx \sqrt{Kt}$ or $\sqrt{Kt_0}$	7.873	8.311	ft.	
	$b_1 \approx \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$	—	—	ft.	
Potentiometric Surface *	$Pot. = El - CD + 2.319 Ps$	—	—	ft.	

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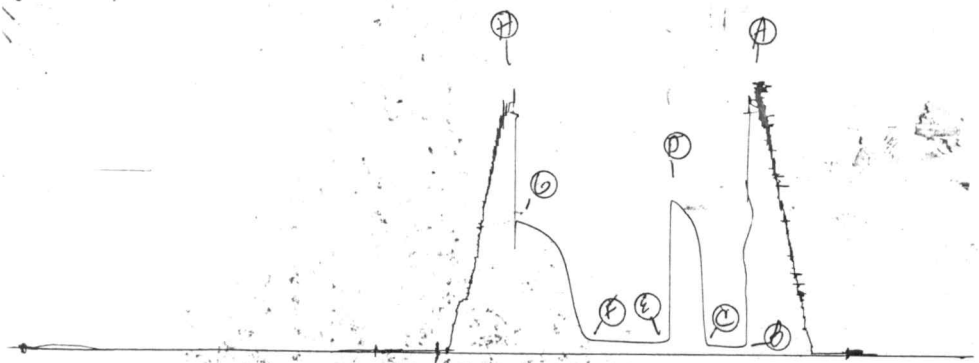
INTERPRETATIONS AND CALCULATIONS

16191

PST3

PK # 6.191

I



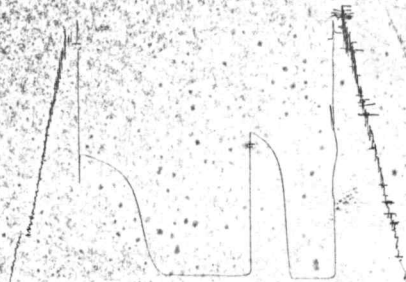
Sk # 6191

0

DST #3

6191

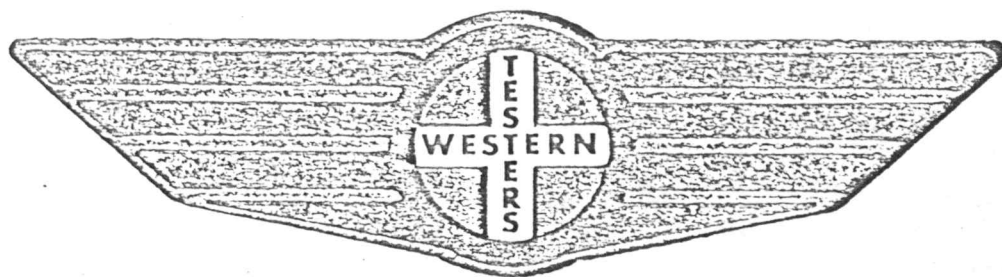
3351



FORMATION

TEST

REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

WESTERN TESTING CO. INC.
SUBSURFACE PRESSURE SURVEY

DATE: 8-23-85
CUSTOMER: RAINS & WILLIAMSON OIL CO INC
WELL: 2 TEST: 4
ELEVATION (KB): 1527 FORMATION: MISSISSIPPI
SECTION: 19 TOWNSHIP: 25S
RANGE: 8E COUNTY: BUTLER STATE: KANSAS
GAUGE SN #5666 RANGE: 3950 CLOCK: 12

INTERVAL TEST FROM: 2754 FT TO: 2769 FT TOTAL DEPTH: 2769 FT
DEPTH OF SELECTIVE ZONE: FT
PACKER DEPTH: 2749 FT SIZE: 6 3/4 IN PACKER DEPTH: 2754 FT SIZE: 6 3/4 IN
PACKER DEPTH: FT SIZE: IN PACKER DEPTH: FT SIZE: IN

DRILLING CONTRACTOR: RAINS/WILLIAMSON #4
MUD TYPE: CHEMICAL VISCOSITY: 55
WEIGHT: 8.8 WATER LOSS (CC): 12.0
CHLORIDES (P.P.M.): 1500
JARS - MAKE: SERIAL NUMBER:
DID WELL FLOW? NO REVERSED OUT? NO
DRILL COLLAR LENGTH: 210 FT I.D.: 2.25 IN
WEIGHT PIPE LENGTH: FT I.D.: IN
DRILL PIPE LENGTH: 2524 FT I.D.: 3.8 IN
TEST TOOL LENGTH: 20 FT TOOL SIZE: 5 1/2 OD IN
ANCHOR LENGTH: 15 FT SIZE: 5 1/2 OD IN
SURFACE CHOKE SIZE: 3/4 IN BOTTOM CHOKE SIZE: 3/4 IN
MAIN HOLE SIZE: 7 7/8 IN TOOL JOINT SIZE: 4 1/2 XH IN

BLOW: WEAK BLOW THROUGHOUT TEST.

RECOVERED: 5 FT OF: FREE OIL.
RECOVERED: 125 FT OF: SLIGHTLY OIL CUT MUD (2% OIL).
RECOVERED: FT OF: CHLORIDES 9000 PPM.
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:
RECOVERED: FT OF:

REMARKS: SLID TOOL 4 FEET TO BOTTOM.
FLUSHED TOOL FINAL FLOW PERIOD.

TIME SET PACKER(S): 8:00 AM TIME STARTED OFF BOTTOM: 11:00 AM
WELL TEMPERATURE: 105 °F
INITIAL HYDROSTATIC PRESSURE: (A) 1277 PSI
INITIAL FLOW PERIOD MIN: 30 (B) 53 PSI TO (C) 58 PSI
INITIAL CLOSED IN PERIOD MIN: 30 (D) 785 PSI
FINAL FLOW PERIOD MIN: 60 (E) 85 PSI TO (F) 85 PSI
FINAL CLOSED IN PERIOD MIN: 63 (G) 703 PSI
FINAL HYDROSTATIC PRESSURE (H) 1253 PSI

Liquid Production

B.T. Gauge Numbers			5666	Ticket Number	6192
Initial Hydrostatic			PRESSURE 1277	Elevation	1527 KB ft.
Final Hydrostatic			1253	Indicated Production	1st Flow .213 bbls. day
1st Flow	Initial	Time — — — —	53	Total Flow	.426 bbls. day
	Final	30	58		
Initial Closed In Pressure			30	Drill Collar Length	210 ft.
			785	Drill Collar I.D.	2.25 in.
2nd Flow	Initial	— — — —	85	Drill Pipe Factor	.0142 bbls. ft.
	Final	60	85	Hole Size	7.875 in.
Final Closed In Pressure			63	Footage Tested	15 ft.
Extrapolated Static Pressure	Initial		980 - 477	Mud Weight	8.8 lbs. gal.
	Final		808 - 446	Viscosity, Oil or Water	cp
Slope psi/cycle	Initial		503.296	Oil API Gravity	—
	Final		361.367	Water Specific Gravity	—

Remarks:

SUMMARY		Gauge No. Depth		
Product	Equation		INITIAL	FINAL
Production	$Q = \frac{1440 R}{t}$		10.236	10.134
Transmissibility	$\frac{Kh}{\mu} = \frac{162.6 Q}{m}$		3.309	4.598
Indicated Flow Capacity	$Kh = \frac{Kh}{\mu} \mu$		7.941	11.036
Average Effective Permeability	$K = \frac{Kh}{h}$		1.588	2.207
	$K_1 = \frac{Kh}{h_1}$		—	—
Damage Ratio	$DR = .183 \frac{P_s - P_f}{m}$		.335	.365
Theoretical Potential w/Damage Removed	$Q_1 = Q DR$		10.236	10.134
Approx. Radius of Investigation	$b \approx \sqrt{Kt}$ or $\sqrt{Kt_0}$		6.902	11.508
	$b_1 \approx \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$		—	—
Potentiometric Surface *	$Pot. = EI - CD + 2.319 P_s$		—	—

NOTICE: These calculations are based upon information furnished by you and taken from Drill Stem Test pressure charts, and are furnished you for your information. In furnishing such calculations and elevations based thereon, Western Testing Co., Inc. is merely expressing its opinion. You agree that Western Testing Co., Inc. makes no warranty express or implied as to the accuracy of such calculations or opinions, and that Western Testing Co., Inc. shall not be liable for any loss or damage, whether due to negligence or otherwise, in connection with such calculations and opinions.

INTERPRETATIONS AND CALCULATIONS

Liquid Production

B.T. Gauge Numbers		5666	Ticket Number	6192
Initial Hydrostatic		1277	Elevation	1527 K.B. ft.
Final Hydrostatic		1253	Indicated Production	213 bbls. day
1st Flow	Initial	53	1st Flow	213 bbls. day
	Final	58	Total Flow	426 bbls. day
Initial Closed In Pressure		785	Drill Collar Length	210 ft.
2nd Flow		85	Drill Collar I.D.	2-25 in.
Initial		85	Drill Pipe Factor	0.192 bbls. ft.
Final		85	Hole Size	7.875 in.
Final Closed In Pressure		703	Footage Tested	15 ft.
Extrapolated Static Pressure		980 - 477	Mud Weight	8.8 lbs. gal.
Initial		808 - 446	Viscosity, Oil or Water	cp
Final		503.296	Oil API Gravity	—
Slope psi/cycle		361.367	Water Specific Gravity	—
Initial				
Final				

Remarks:

1.44 43.33
86.67

SUMMARY

Gauge
No.
Depth

Product	Equation	INITIAL	FINAL	Units
Production	$Q = \frac{1440 R}{t}$	10.236	10.134	bbls. day.
Transmissibility	$\frac{Kh}{\mu} = \frac{162.6 Q}{m}$	3.309	4.598	md. ft. cp
Indicated Flow Capacity	$Kh = \frac{Kh}{\mu} \mu$	7.941	11.036	md. ft.
Average Effective Permeability	$K = \frac{Kh}{h}$	1.588	2.207	md.
	$K_i = \frac{Kh}{h_i}$	—	—	md.
Damage Ratio	$DR = .183 \frac{P_s - P_f}{m}$	.335	.365	—
Theoretical Potential w/Damage Removed	$Q_1 = Q DR$	10.236	10.134	bbls. day
Approx. Radius of Investigation	$b \approx \sqrt{Kt}$ or $\sqrt{Kt_0}$	6.902	11.508	ft.
	$b_1 \approx \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$	—	—	ft.
Potentiometric Surface *	$Pot. = EI - CD + 2.319 P_s$	—	—	ft.

NOTICE:

These calculations are based upon information furnished by you and taken from Drill Stem Test pressure charts, and are furnished you for your information. In furnishing such calculations and elevations based thereon, Western Testing Co., Inc. is merely expressing its opinion. You agree that Western Testing Co., Inc. makes no warranty express or implied as to the accuracy of such calculations or opinions, and that Western Testing Co., Inc. shall not be liable for any loss or damage, whether due to negligence or otherwise, in connection with such calculations and opinions.

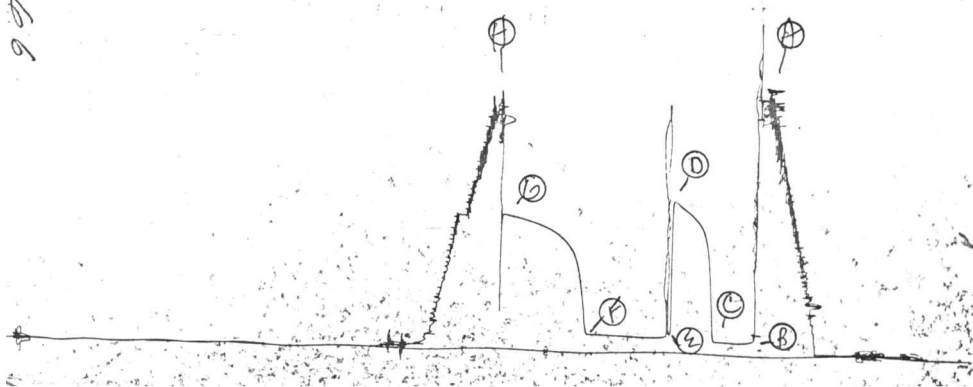
INTERPRETATIONS AND CALCULATIONS

6192

DST#4

Sta #6192
I.

5646



6192

St. # 6192
O.

3351

