

Computer Inventoried

ORIGINAL

DST REPORT

SAGEBRUSH OPERATING

Ochel #1

**DST #1 dated 07/28/1997
1883 to 1913 - - Towanda**

Sec 15-T22S-R13W

County: Stafford State: Kansas

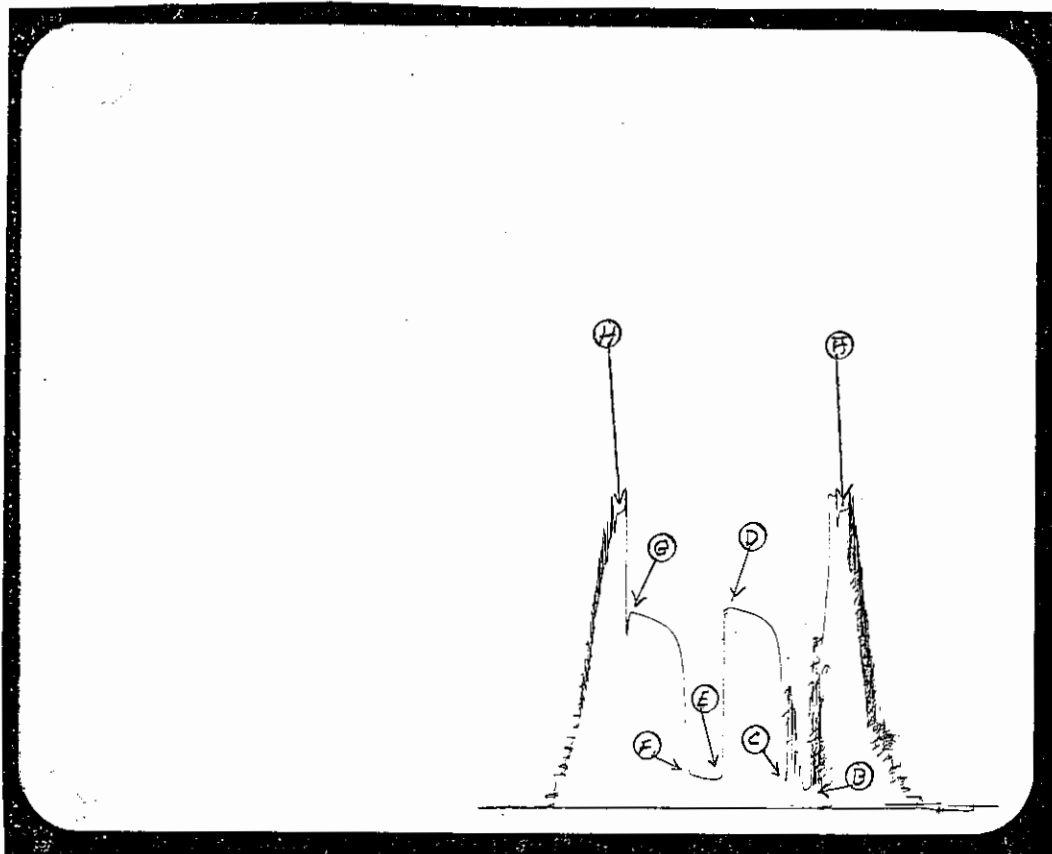
Elevation: 1889 GL

Drilling Contractor: Sterling

Ticket No : 2830

TEST DATA

ORIGINAL



Interval Tested : 1883 ft. to 1913 ft. T.D. = 1913 ft.

Bottom Hole Temp : 95 deg. F

Elevation : 1889 GL

BLOW

IF -- Fair blow - 2 inches of wtr

FF -- Fair blow - 2 inches of wtr

PRESSURES P.S.I.

Initial Hydrostatic Pressure	862	
Initial Flowing Pressure	44 to 72	in 30 mins.
Initial Shut-in Pressure	564	in 45 mins.
Final Flowing Pressure	72 to 88	in 30 mins.
Final Shut-in Pressure	548	in 45 mins.
Final Hydrostatic Pressure	858	

RECOVERY

FEET --- DESCRIPTION

180 Muddy to clean saltwater - Chlor = 83,000 PPM

Liquid flow rate = .88 bbl or 21.1 bbl/day wtr

180 --- TOTAL LIQUID RECOVERY

Ticket No : 2830

ORIGINAL

TEST DATA

REMARKS

PIT MUD

Mud Type : Chemical Weight : 8.7 lb/gal Chloride : 3000 ppm
 Viscosity : 56 sec/qt Filtrate : 9.6 ml/30 min

DRILL STRING DESCRIPTION

DRILL PIPE -- 1580 FT. X 3.8 ID.
 DRILL COLLARS -- 243 FT. X 2.25 ID.
 TEST TOOLS -- 50 FT. X .75 ID.

BOTTOM HOLE SAMPLER INFORMATION

PRESSURE = psi SAMPLE CHAMBER = cc
 WATER/MUD = cc -
 OIL = cc -
 GAS = Scf -
 TOTAL LIQUID = cc

SURFACE FLOW DATA

Initial Flow Period

Final Flow Period

Time (min)	Press. (psia)	Orifice (in)	Flowrate (MCFD)	Time (min)	Press. (psia)	Orifice (in)	Flowrate (MCFD)
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Based on 14.65 psia, 60 Deg. F., 0.600 Specific

Ticket No : 2830

ORIGINAL

PRESSURE DATA

Incremental Breakdown of Pressure Data

Test Ticket Number : 2830

Recorder Number : 13771

Recorder Capacity : 2225

Recorder Depth : 1885

Pt.	Initial Flow		Initial Shut-in		Final Flow		Final Shut-in	
	Time (min)	Press. (psig)	Time (min)	Press. (psig)	Time (min)	Press. (psig)	Time (min)	Press. (psig)
1	0	44.1	0	71.6	0	72.2	0	88.2
2	5	49.6	3	195.2	5	72.2	3	145.0
3	10	55.1	6	440.1	10	73.3	6	383.2
4	15	57.9	9	487.2	15	76.1	9	449.4
5	20	66.1	12	507.4	20	81.0	12	476.8
6	25	68.9	15	520.0	25	83.8	15	493.2
7	30	71.6	18	529.9	30	88.2	18	505.8
8			21	537.0			21	512.9
9			24	542.5			24	518.9
10			27	546.3			27	525.5
11			30	549.6			30	529.9
12			33	552.9			33	534.8
13			36	555.6			36	538.6
14			39	558.9			39	542.5
15			42	561.6			42	545.2
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Ticket No : 2830

D.S.T. EVALUATION DATA

D.S.T. Flowrates	Oil	0.00	bbl/day
	Gas	0.00	m.c.f.d
	Wtr	21.10	bbl/day

Permeability-Thickness Product (kh)	19.767 md-ft
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Average Permeability (Using 8 ft. effective pay)	(k_e)	2.471 md.
Permeability to Oil	(k_o)	0.000 md.
Permeability to Gas	(k_g)	0.000 md.
Permeability to Water	(k_w)	2.471 md.

Skin Factor	-0.48	Flow Efficiency	113.1 %	Damage Ratio	0.9
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Radius of Investigation	68.13 feet
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Reservoir Pressure

Measured	562.55 psia	Extrapolated	622.55 psia
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Theoretical Flowrates (Damage Removed)	Oil	0.00	bbl/day
	Gas	0.00	m.c.f.d
	Wtr	18.66	bbl/day

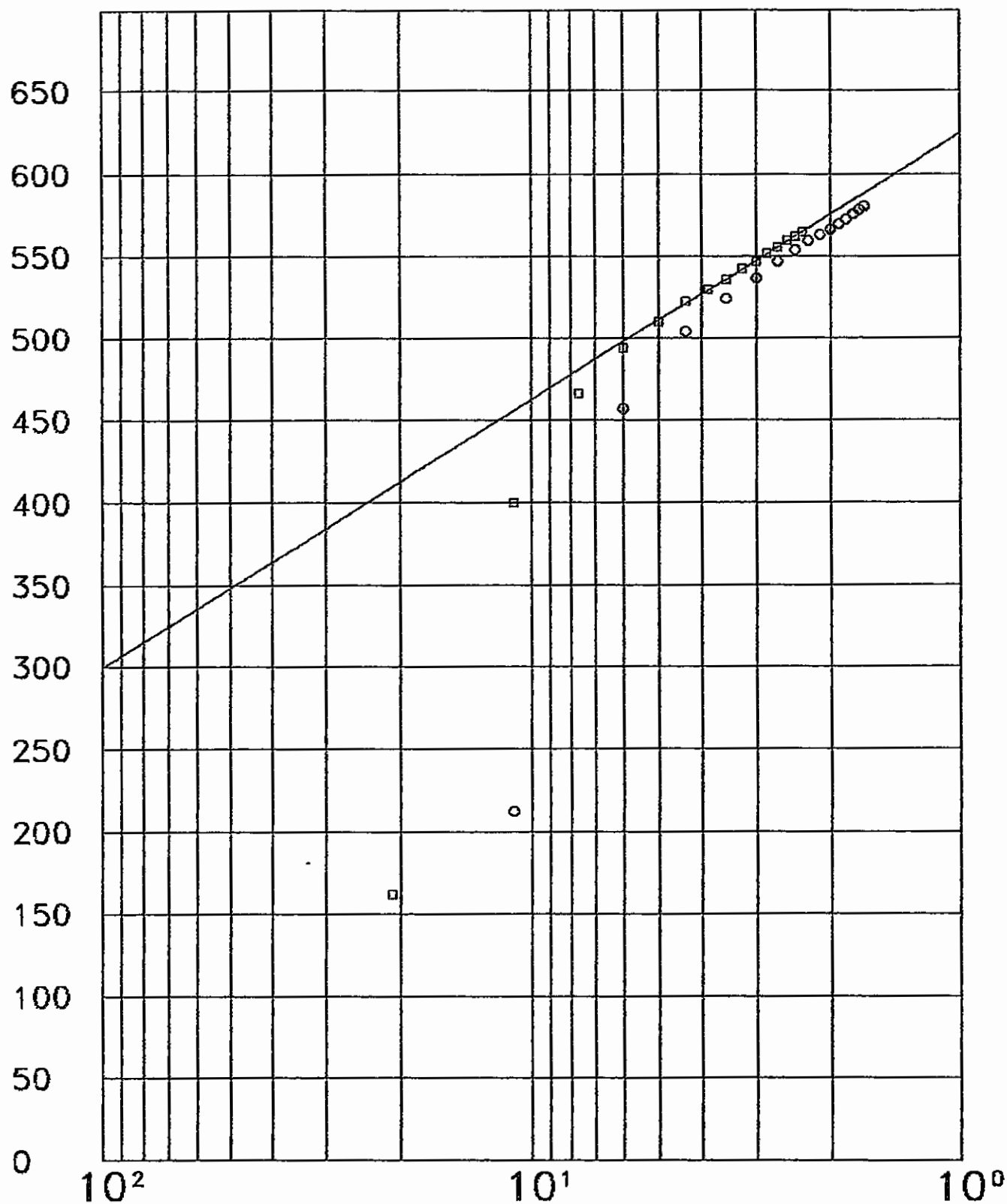
HORNER PLOT

ORIGINAL

$\text{Log } (tp+\Delta t)/\Delta t$

$M = -162.7$

$P^* = 622.5$



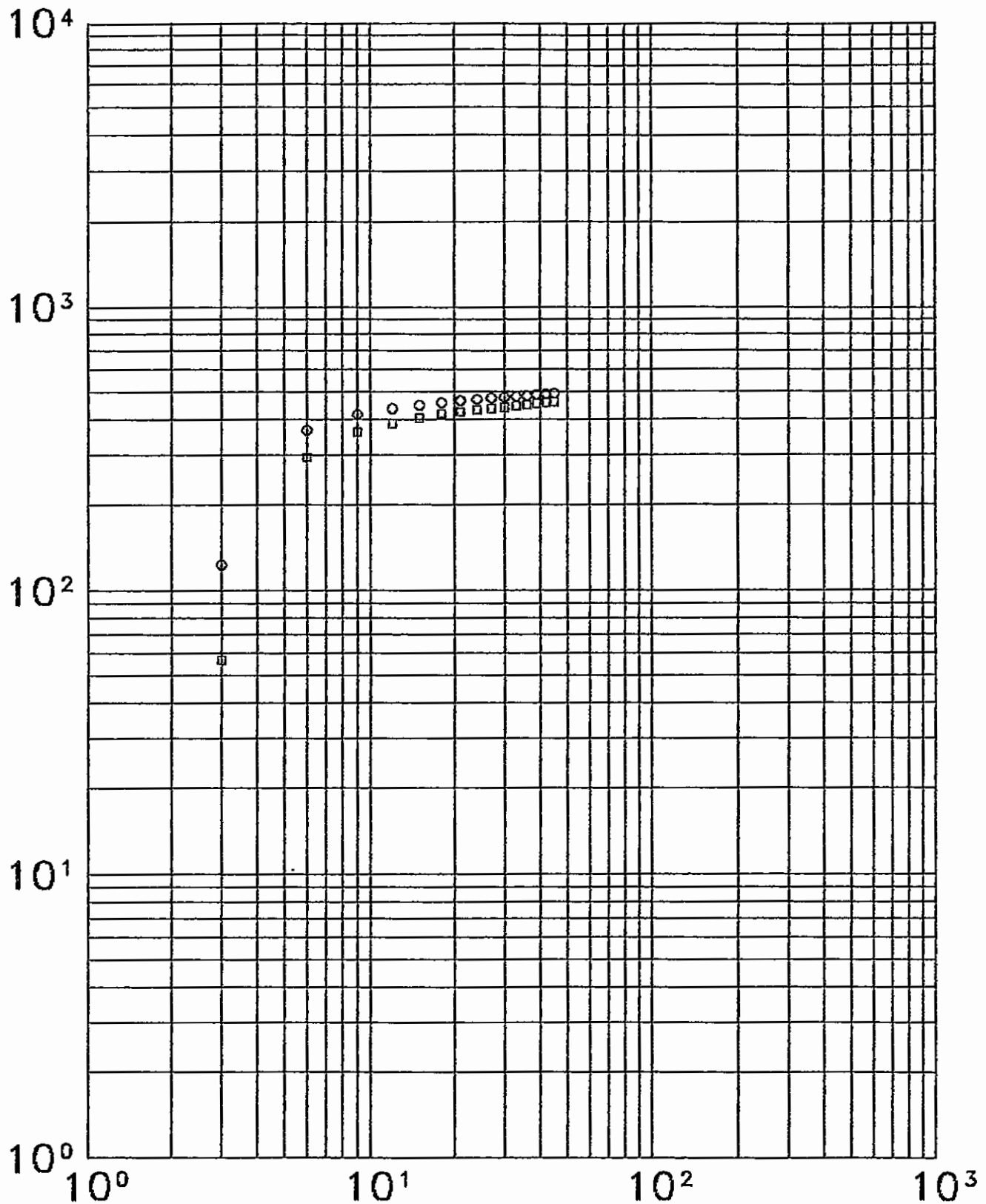
○ - First Shut-in
□ - Second Shut-in

Ticket No. 2830

LOG-LOG DATA PLOT

ORIGINAL

Δp vs Δt



○ - First Shut-in
□ - Second Shut-in

Ticket No. 2830

Computer Inventoried

ORIGINAL

DST REPORT

SAGEBRUSH OPERATING

Ochel #1

**DST #2 dated 07/28/1997
1975 to 2005 - - Florence**

Sec 15-T22S-R13W

County: Stafford State: Kansas

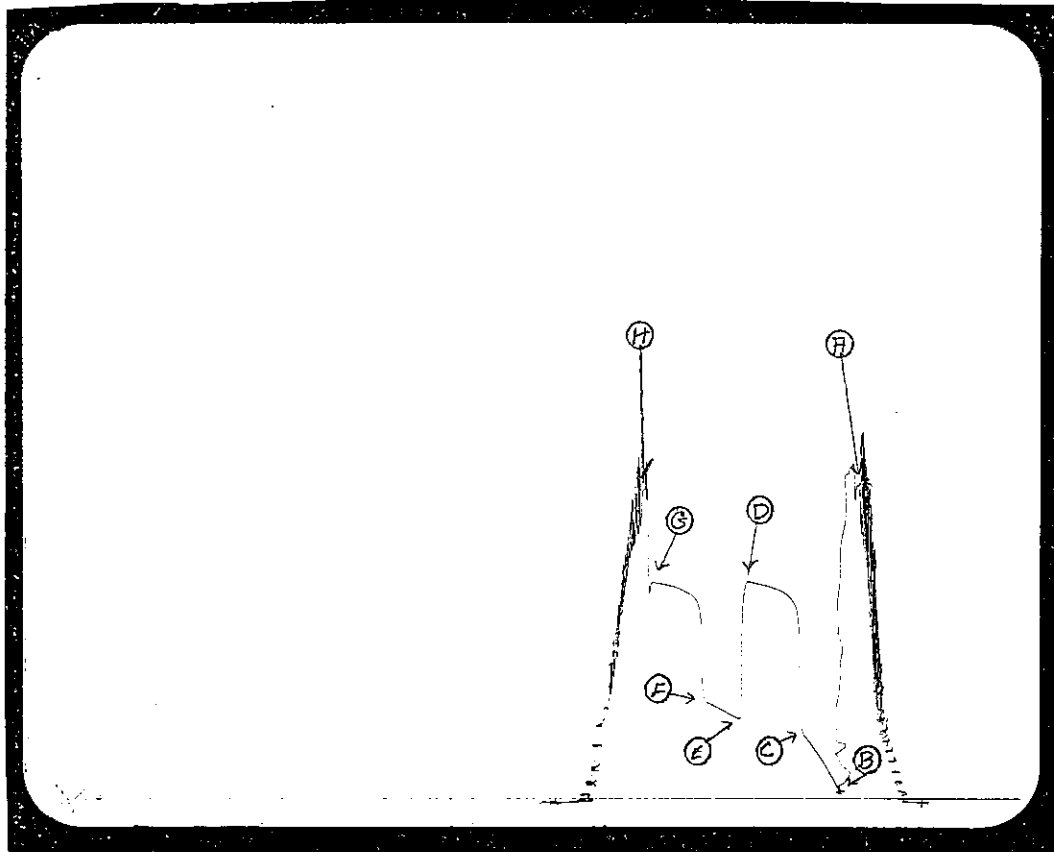
Elevation: 1889 GL

Drilling Contractor: Sterling

Ticket No : 2831

TEST DATA

ORIGINAL



Interval Tested : 1975 ft. to 2005 ft. T.D. = 2005 ft.

Bottom Hole Temp : 97 deg. F Elevation : 1889 GL

BLOW

IF -- Good blow - 14 inches of wtr
FF -- Good blow - 8 inches of wtr

PRESSURES P.S.I.

Initial Hydrostatic Pressure	911
Initial Flowing Pressure 19 to	184 in 30 mins.
Initial Shut-in Pressure	619 in 45 mins.
Final Flowing Pressure 229 to	276 in 30 mins.
Final Shut-in Pressure	617 in 45 mins.
Final Hydrostatic Pressure	902

RECOVERY

FEET --- DESCRIPTION

610 Muddy to clean saltwater - Chlor = 120,000 FPM

Liquid volume = 6.4 bbl or 153 bbl/day saltwater

610 --- TOTAL LIQUID RECOVERY

Ticket No : 2831

TEST DATA

ORIGINAL

REMARKS

PIT MUD

Mud Type : Chemical Weight : 8.7 lb/gal Chloride : 3000 ppm
Viscosity : 56 sec/qt Filtrate : 9.6 ml/30 min

DRILL STRING DESCRIPTION

DRILL PIPE -- 1667 FT. X 3.8 ID.
DRILL COLLARS -- 243 FT. X 2.25 ID.
TEST TOOLS -- 50 FT. X .75 ID.

BOTTOM HOLE SAMPLER INFORMATION

PRESSURE = psi SAMPLE CHAMBER = cc
WATER/MUD = cc -
OIL = cc -
GAS = Scf -
TOTAL LIQUID = cc

SURFACE FLOW DATA

Initial Flow Period

Final Flow Period

Time (min)	Press. (psia)	Orifice (in)	Flowrate (MCFD)	Time (min)	Press. (psia)	Orifice (in)	Flowrate (MCFD)
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Based on 14.65 psia, 60 Deg. F., 0.600 Specific

Ticket No : 2831

ORIGINAL

PRESSURE DATA

Incremental Breakdown of Pressure Data

Test Ticket Number : 2831

Recorder Number : 13771

Recorder Capacity : 2225

Recorder Depth : 1977

Pt.	Initial Flow		Initial Shut-in		Final Flow		Final Shut-in	
	Time (min)	Press. (psig)	Time (min)	Press. (psig)	Time (min)	Press. (psig)	Time (min)	Press. (psig)
1	0	19.3	0	183.6	0	228.8	0	275.7
2	5	57.9	3	323.5	5	233.2	3	368.9
3	10	91.5	6	547.4	10	243.1	6	555.1
4	15	121.8	9	568.2	15	253.1	9	573.7
5	20	158.2	12	579.7	20	262.5	12	583.0
6	25	170.9	15	588.5	25	271.3	15	589.5
7	30	183.6	18	593.9	30	275.7	18	594.5
8			21	598.3			21	599.4
9			24	602.2			24	603.8
10			27	605.5			27	607.2
11			30	608.3			30	610.0
12			33	611.1			33	612.2
13			36	613.8			36	613.8
14			39	616.1			39	615.0
15			42	617.7			42	616.6
16			45	619.4			45	617.0
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Ticket No : 2831

D.S.T. EVALUATION DATA

D.S.T. Flowrates	Oil	0.00	bbl/day
	Gas	0.00	m.c.f.d
	Wtr	153.00	bbl/day

Permeability-Thickness Product (kh)	290.872 md-ft
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Average Permeability	(k_t)	18.180 md.
(Using 16 ft. effective pay)		
Permeability to Oil	(k_o)	0.000 md.
Permeability to Gas	(k_g)	0.000 md.
Permeability to Water	(k_w)	18.180 md.

Skin Factor	-0.13	Flow Efficiency	102.6 %	Damage Ratio	1.0
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Radius of Investigation	178.09 feet
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Reservoir Pressure

Measured	631.65 psia	Extrapolated	664.90 psia
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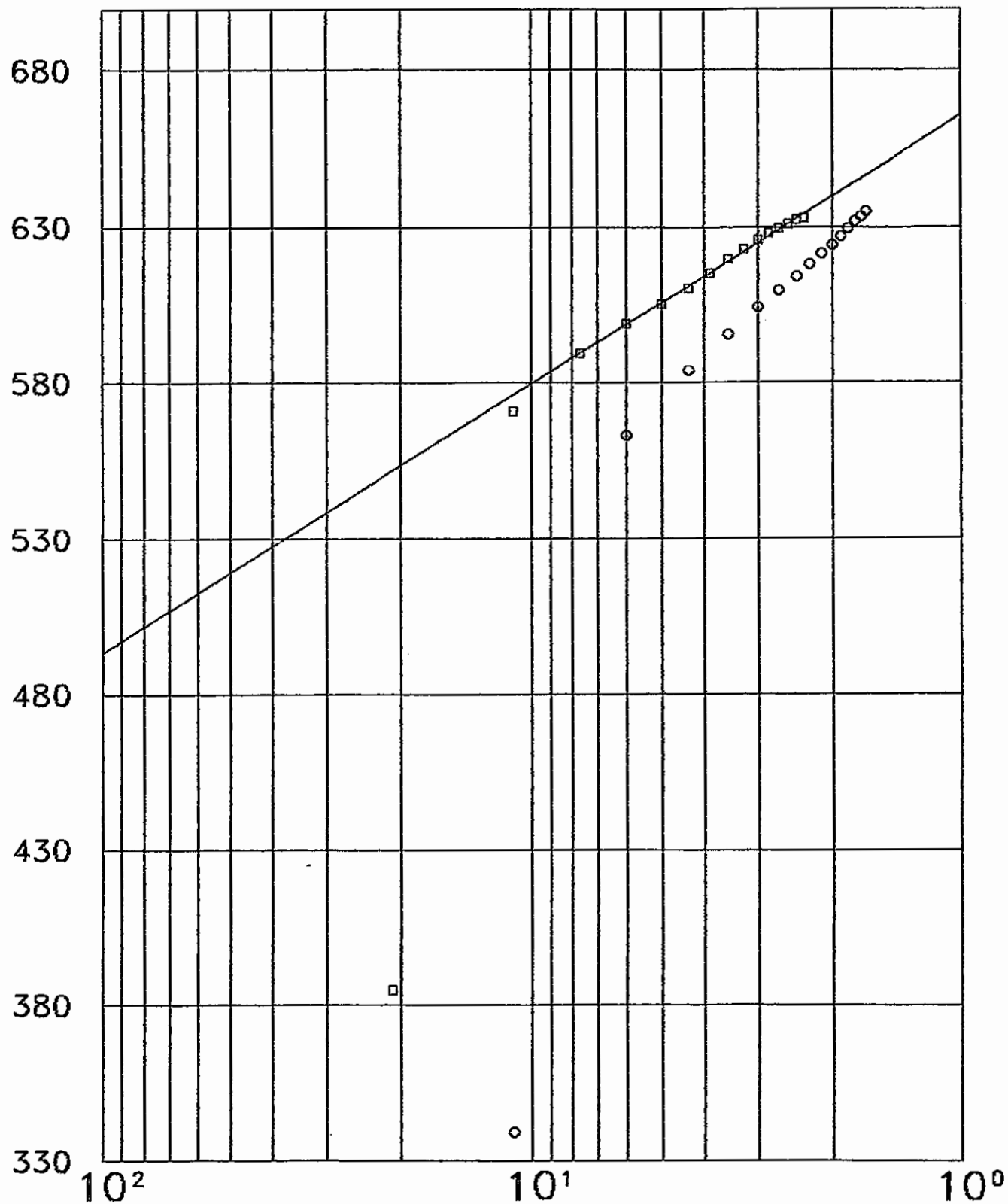
Theoretical Flowrates (Damage Removed)	Oil	0.00	bbl/day
	Gas	0.00	m.c.f.d
	Wtr	149.18	bbl/day

HORNER PLOT ORIGINAL

$\text{Log } (tp+\Delta t)/\Delta t$

$M = -86.4$

$P^* = 664.8$

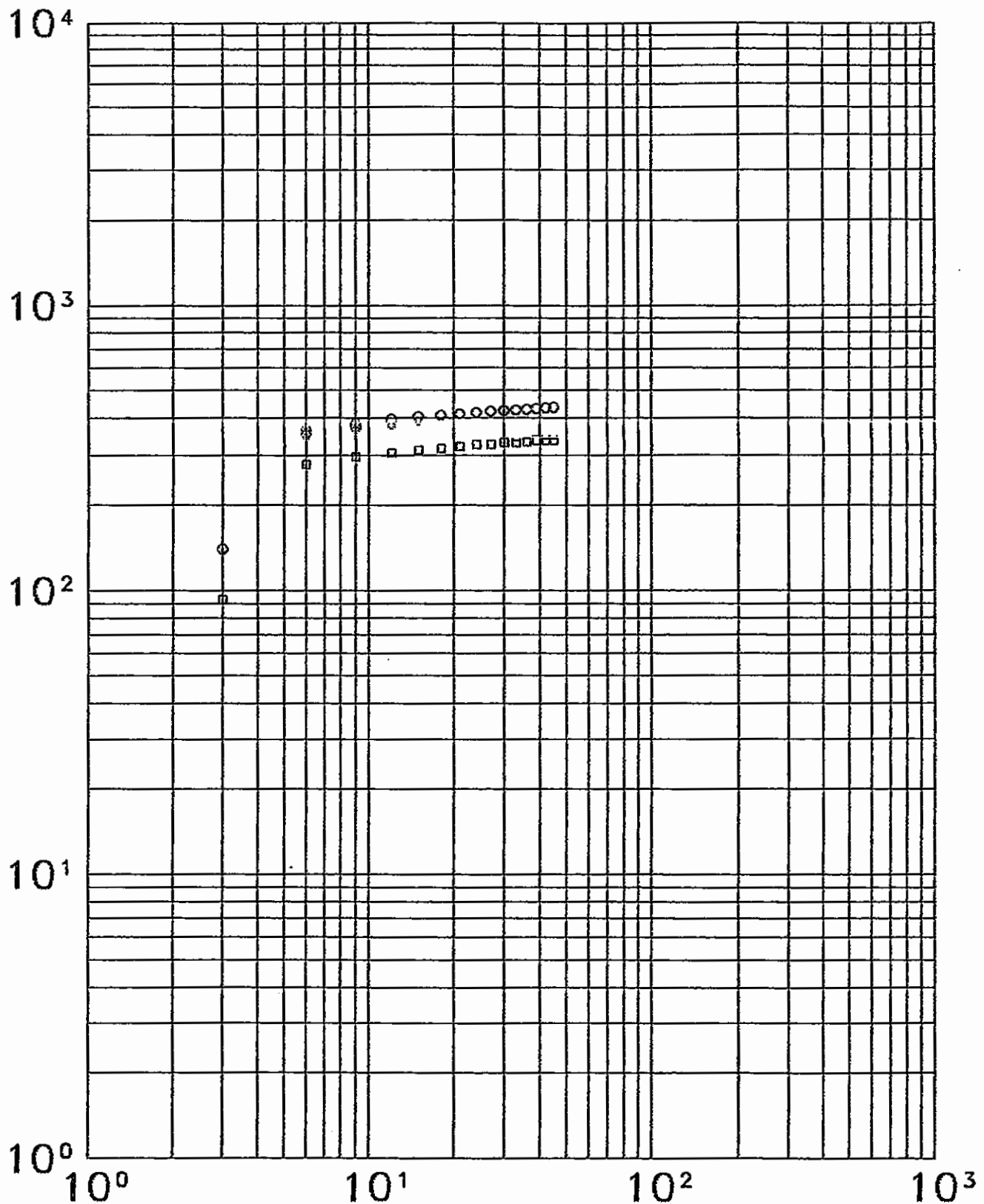


○ - First Shut-in
 □ - Second Shut-in

Ticket No. 2831

LOG-LOG DATA PLOT ORIGINAL

Δp vs Δt



○ - First Shut-in
□ - Second Shut-in

Ticket No. 2831