Computer Inventoried

36-32S-34W

REPORT NO. 19233F
PAGE NO. 1

TEST DATE: 22-MAY-1987

WELL PERFORMANCE TESTING™ REPORT

A Production System Analysis (NODAL™)
Based On Model Verified™ Interpretation

FLOPETROL JOHNSTON
Schlumberger

15-175-20961

Company: DONALD C. SLAWSON

Well: HITCH #1-36

TEST IDENTIFICATION

Test Type	OH-DST
Test No.	ONE
Formation	UPPER MORROW
Test Interval (ft)	5637 TO 5690
Reference Depth	K.B.

WELL LOCATION

Field	W/C
County	SEWARD
State	KANSAS
Sec/Twn/Rng	S36/32S/34W
Elevation (ft)	2896

HOLE CONDITIONS

Total Depth (MD/TVD) (ft)	5690
Hole Size (in)	7 7/8
Casing/Liner I.D. (in)	
Perf'd Interval/Net Pay (ft)	
Shot Density/Diameter (in)	

MUD PROPERTIES

Mud Type	CHEMICAL
Mud Weight (lb/gal)	9.2
Mud Resistivity (ohm.m)	1.8 @ 65F
Filtrate Resistivity (ohm.m)	1.7 @ 65F
Filtrate Chlorides (ppm)	3500

INITIAL TEST CONDITIONS

Initial Hydrostatic (psi)	2790
Gas Cushion Type	
Surface Pressure (psi)	
Liquid Cushion Type	
Cushion Length (ft)	

TEST STRING CONFIGURATION

Pipe Length (ft)/I.D. (in)	5148 / 2.25
Collar Length (ft)/I.D. (in)	450 / 2.25
Packer Depths (ft)	5637
Bottomhole Choke Size (in)	15/16
Gauge Depth (ft)/Type	5684 / MECH.

NET PIPE RECOVERY

Volume	Fluid Type	Properties
100 FEET	GAS CUT MUD	3000 PPM CHL.
		RES. 1.6 @ 64F

NET SAMPLE CHAMBER RECOVERY

Volume	Fluid Type	Properties
4.5 FT3	GAS	

Pressure: 1450	GOR:	GLR:

INTERPRETATION RESULTS

Model of Behavior	
Fluid Type Used for Analysis	
Reservoir Pressure (psi)	
Transmissibility (md.ft/cp)	
Effective Permeability (md)	
Skin Factor/Damage Ratio	
Storativity Ratio	
Interporosity Flow Coeff.	
Distance to an Anomaly (ft)	
Radius of Investigation (ft)	
Potentiometric Surface (ft)	

ROCK/FLUID/WELLBORE PROPERTIES

Oil Density (deg. API)	
Basic Solids (%)	
Gas Gravity	
Water Cut (%)	
Viscosity (cp)	
Total Compressibility (1/psi)	
Porosity (%)	17
Reservoir Temperature (F)	134
Form.Vol.Factor (bbl/STB)	

PRODUCTION RATE DURING TEST: 2.1 MMSCF/D

COMMENTS: THIS WAS A MECHANICALLY SUCCESSFUL DRILL STEM TEST OF THE UPPER MORROW FORMATION. THE BUILD UP BEHAVIOR INDICATES A CONSTANT PRESSURE OUTER BOUNDARY RESERVOIR SUCH AS A WATER DRIVE.

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SEQUENCE OF EVENTS

FLOPETROL JOHNSTON
Schlumberger

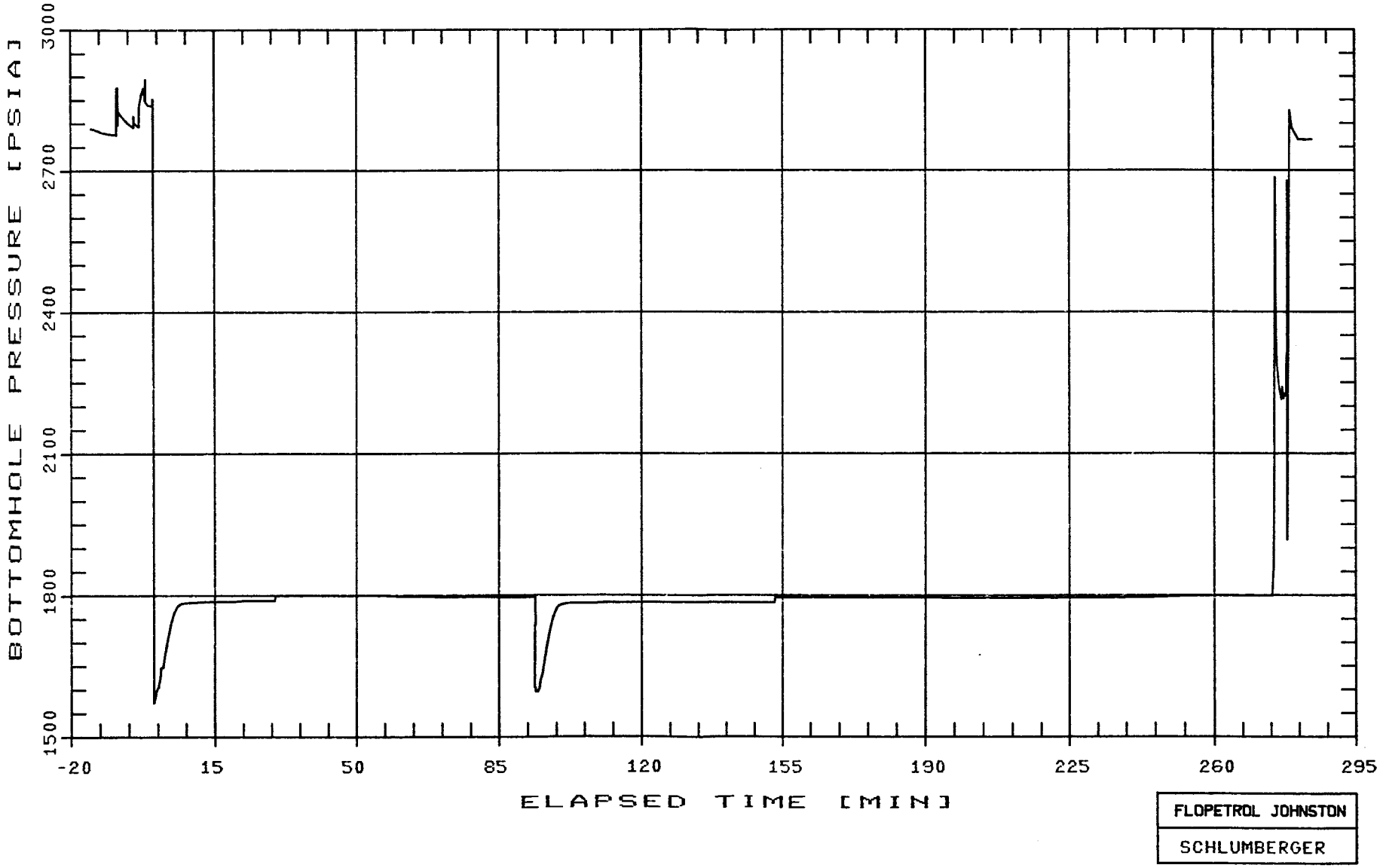
EVENT NO.	DATE	TIME (HR:MIN)	DESCRIPTION	ELAPSED TIME (HR:MIN)	BHP (PSIA)	WHP (PSIA)
1	22-MAY	08:35	SET PACKER		2790	
2		08:37	OPEN TOOL	00:00	1573	
3		08:39	GAS TO SURFACE	00:02		
4		08:52	2.1 MMSCF/D STABILIZED	00:15		1440
5		09:07	SHUT IN TOOL	00:30	1790	1440
6		10:07	END SHUT IN	01:30	1797	
7		10:10	RE-OPENED TOOL	01:33	1596	
8		10:15	2.05 MMSCF/D	01:38		
9		10:20	2.1 MMSCF/D STABILIZED	01:42		1440
10		10:50	2.1 MMSCF/D	02:12		
11		11:11	SHUT IN TOOL 2.1 MMSCF/D	02:33	1785	1440
12		13:11	END SHUT IN	04:33	1800	
13	22-MAY	13:20	PULLED PACKER LOOSE		2765	
14						

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BOTTOMHOLE PRESSURE LOG

FIELD REPORT NO. 19233F
INSTRUMENT NO. J-2107
DEPTH : 5684 FT
CAPACITY : 6400 PSI
PORT OPENING : OUTSIDE

COMPANY : DONALD C. SLAWSON
WELL : HITCH #1-36

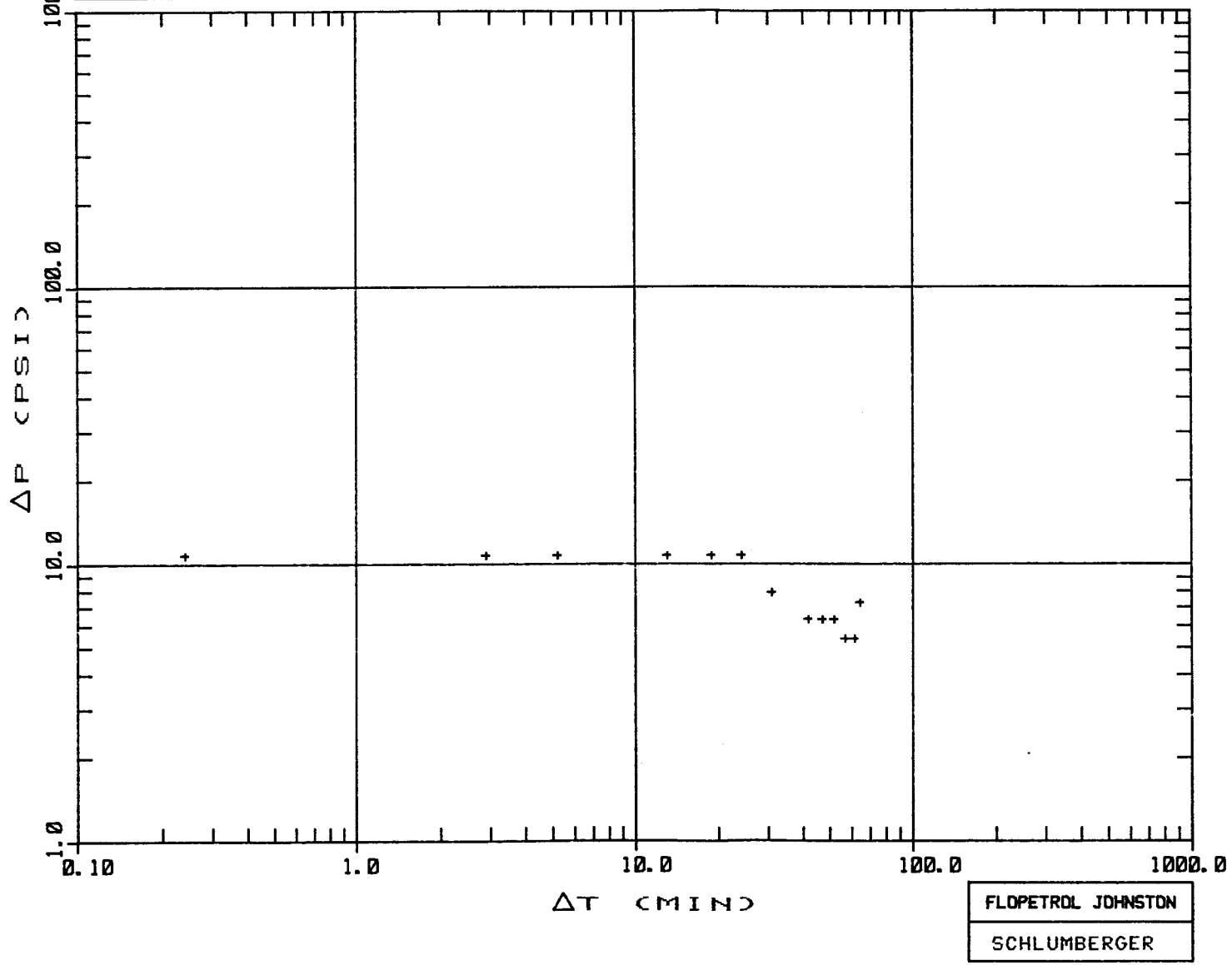


FLOPETROL JOHNSTON
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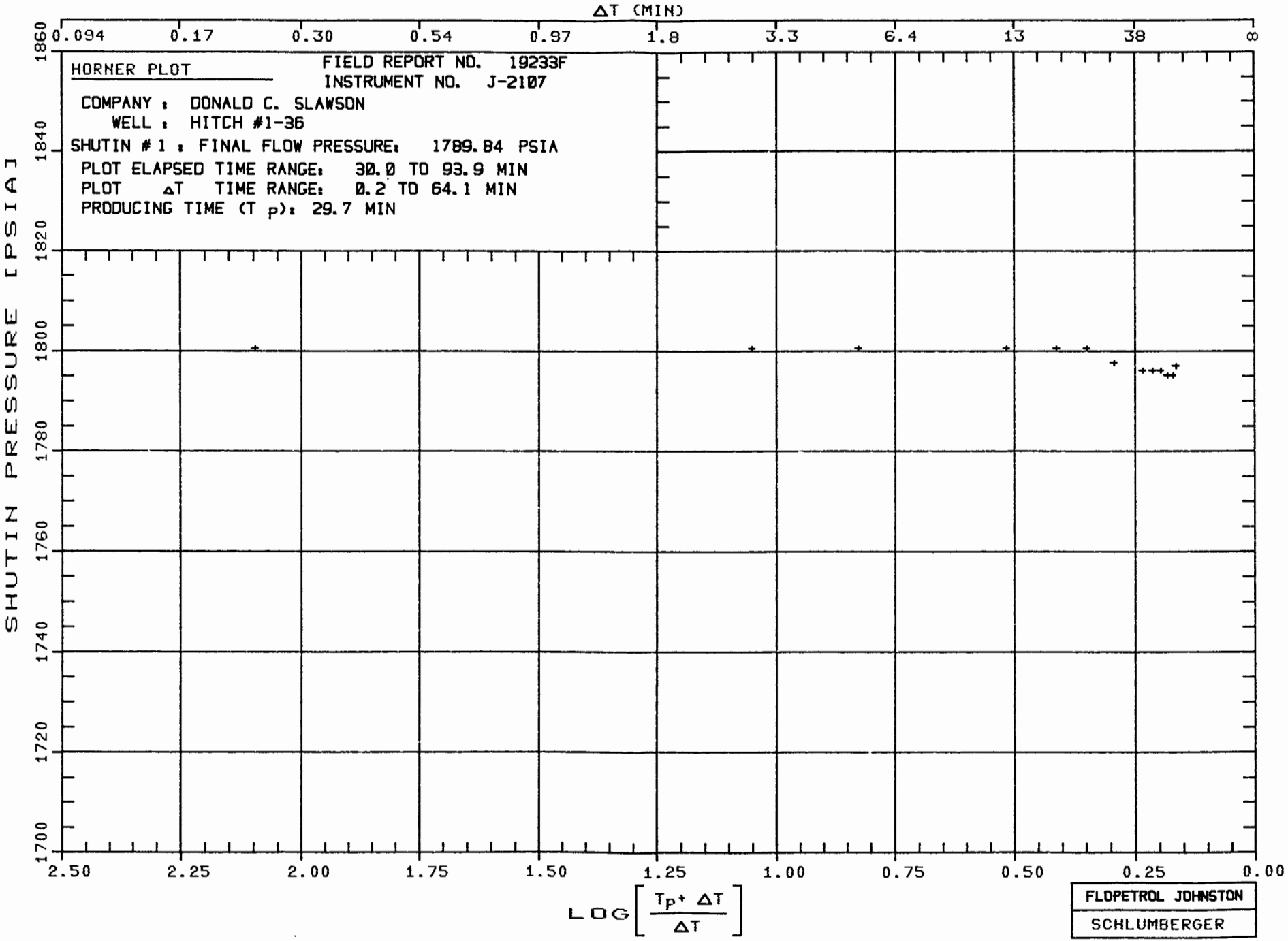
LOG LOG PLOT

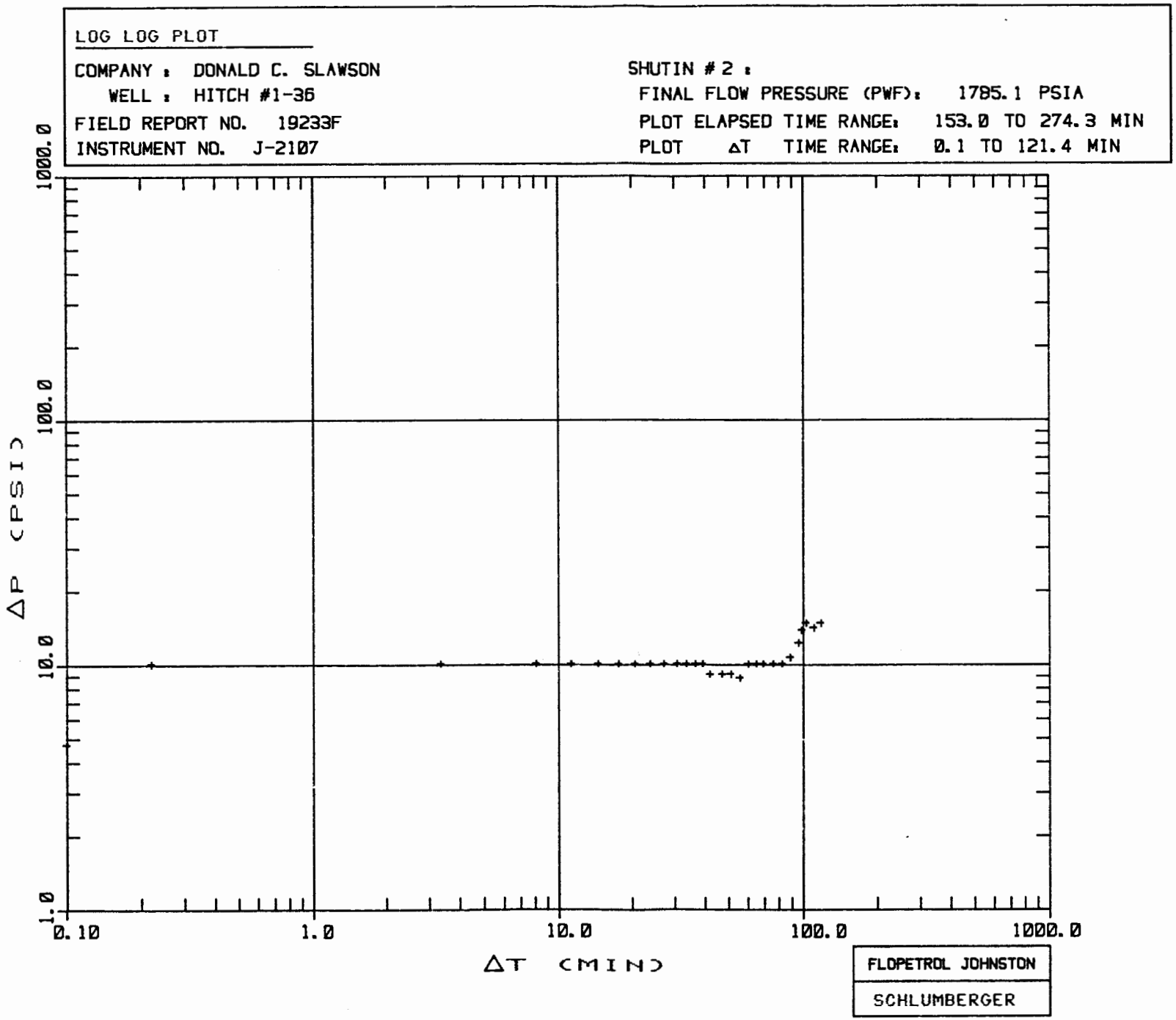
COMPANY : DONALD C. SLAWSON
WELL : HITCH #1-36
FIELD REPORT NO. 19233F
INSTRUMENT NO. J-2107

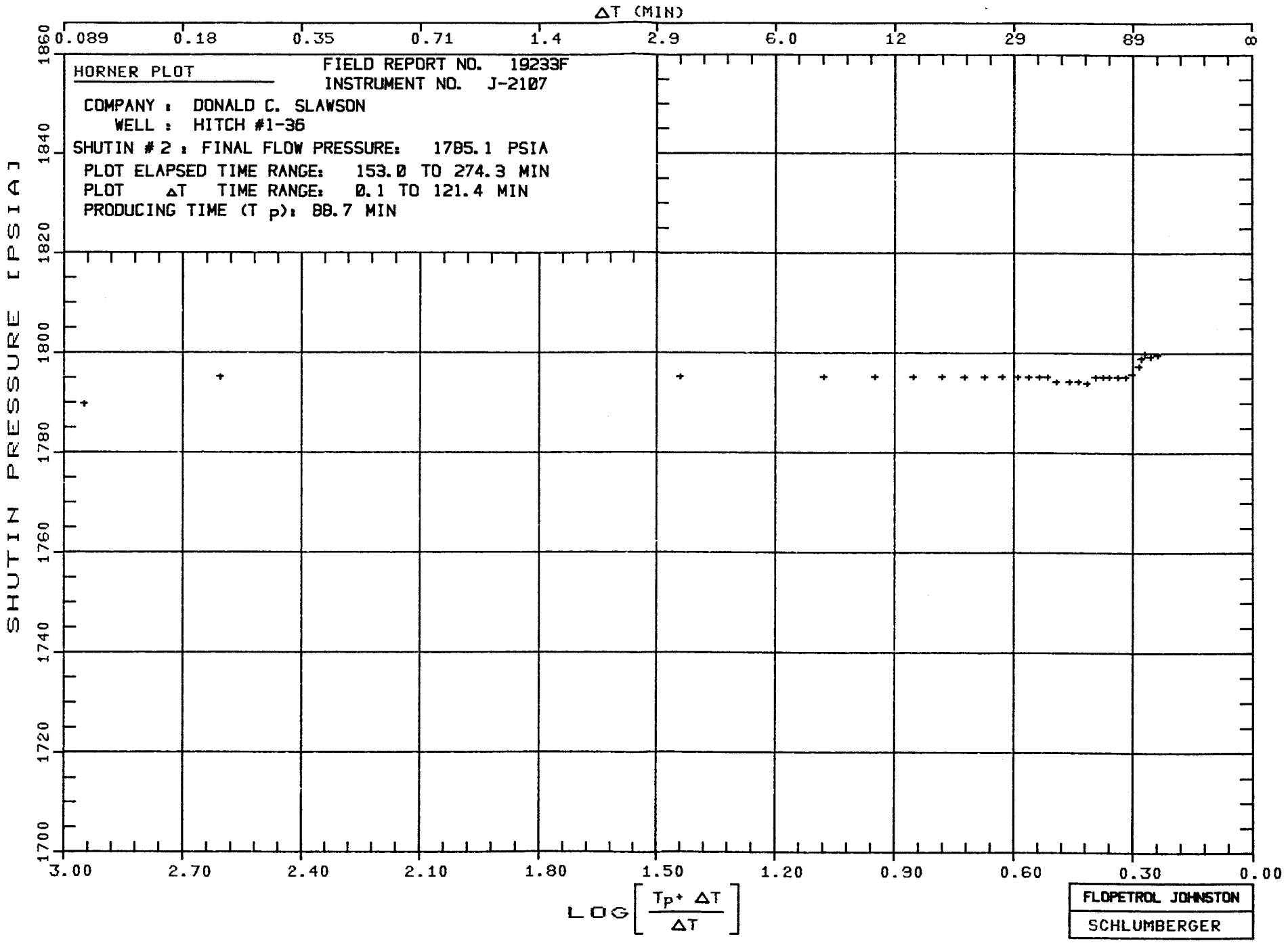
SHUTIN # 1 :
FINAL FLOW PRESSURE (PWF): 1789.84 PSIA
PLOT ELAPSED TIME RANGE: 30.0 TO 93.9 MIN
PLOT ΔT TIME RANGE: 0.2 TO 64.1 MIN



FLOPETROL JOHNSTON
SCHLUMBERGER


ΔT (MIN)
0.094
0.17
0.30
0.54
0.97
1.8
3.3
6.4
13
38
∞
HORNER PLOT
FIELD REPORT NO. 19233F
INSTRUMENT NO. J-2107
COMPANY : DONALD C. SLAWSON
WELL : HITCH #1-36
SHUTIN # 1 : FINAL FLOW PRESSURE: 1789.84 PSIA
PLOT ELAPSED TIME RANGE: 30.0 TO 93.9 MIN
PLOT ΔT TIME RANGE: 0.2 TO 64.1 MIN
PRODUCING TIME (T p): 29.7 MIN
SHUTIN PRESSURE [PSIA]
1860
1840
1820
1800
1780
1760
1740
1720
1700
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
LOG [Tp+ ΔT / ΔT]
FLOPETROL JOHNSTON
SCHLUMBERGER


LOG LOG PLOT
COMPANY : DONALD C. SLAWSON
WELL : HITCH #1-36
FIELD REPORT NO. 19233F
INSTRUMENT NO. J-2107
SHUTIN # 2 :
FINAL FLOW PRESSURE (PWF): 1785.1 PSIA
PLOT ELAPSED TIME RANGE: 153.0 TO 274.3 MIN
PLOT ΔT TIME RANGE: 0.1 TO 121.4 MIN
1000.0
100.0
10.0
1.0
ΔP (PSI)
0.10
1.0
10.0
100.0
1000.0
ΔT (MIN)
FLOPETROL JOHNSTON
SCHLUMBERGER


ΔT (MIN)
0.089
0.18
0.35
0.71
1.4
2.9
6.0
12
29
89
∞
HORNER PLOT
FIELD REPORT NO. 19233F
INSTRUMENT NO. J-2107
COMPANY : DONALD C. SLAWSON
WELL : HITCH #1-36
SHUTIN # 2 : FINAL FLOW PRESSURE: 1785.1 PSIA
PLOT ELAPSED TIME RANGE: 153.0 TO 274.3 MIN
PLOT ΔT TIME RANGE: 0.1 TO 121.4 MIN
PRODUCING TIME (T p): 88.7 MIN
SHUTIN PRESSURE [PSIA]
1860
1840
1820
1800
1780
1760
1740
1720
1700
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
LOG [Tp+ ΔT / ΔT]
FLOPETROL JOHNSTON
SCHLUMBERGER

WELL TEST DATA PRINTOUT

FIELD REPORT # : 19233F

COMPANY : DONALD C. SLAWSON
WELL : HITCH #1-36

INSTRUMENT # : J-2107
CAPACITY [PSI] : 6400.
DEPTH [FT] : 5684.0
PORT OPENING : OUTSIDE
TEMPERATURE [DEG F] : 134.0

LABEL POINT INFORMATION

#	TIME OF DAY HH:MM:SS	DATE DD-MM	EXPLANATION	ELAPSED TIME,MIN	BOT HOLE PRESSURE PSIA
1	8:21:57	22-MY	HYDROSTATIC MUD	-15.05	2789.5
2	8:37: 0	22-MY	START FLOW	0.00	1573.0
3	9: 6:44	22-MY	END FLOW & START SHUT-IN	29.74	1789.8
4	10:10:53	22-MY	END SHUT-IN	93.88	1797.1
5	10:10:59	22-MY	START FLOW	93.98	1595.8
6	11: 9:55	22-MY	END FLOW & START SHUT-IN	152.92	1785.1
7	13:11:19	22-MY	END SHUT-IN	274.32	1799.7
8	13:20:46	22-MY	HYDROSTATIC MUD	283.76	2765.4

SUMMARY OF FLOW PERIODS

PERIOD	START ELAPSED TIME,MIN	END ELAPSED TIME,MIN	DURATION MIN	START PRESSURE PSIA	END PRESSURE PSIA
1	0.00	29.74	29.74	1573.0	1789.8
2	93.98	152.92	58.94	1595.8	1785.1

SUMMARY OF SHUTIN PERIODS

PERIOD	START ELAPSED TIME,MIN	END ELAPSED TIME,MIN	DURATION MIN	START PRESSURE PSIA	END PRESSURE PSIA	FINAL FLOW PRESSURE PSIA	PRODUCING TIME, MIN
1	29.74	93.88	64.14	1789.8	1797.1	1789.8	29.74
2	152.92	274.32	121.40	1785.1	1799.7	1785.1	88.68

TEST PHASE : FLOW PERIOD # 1

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE PRESSURE PSIA
8:37: 0	22-MY	0.00	0.00	1573.0
8:42: 0	22-MY	5.00	5.00	1764.2
8:47: 0	22-MY	10.00	10.00	1786.5
8:52: 0	22-MY	15.00	15.00	1788.1
8:57: 0	22-MY	20.00	20.00	1788.6
9: 2: 0	22-MY	25.00	25.00	1789.8
9: 6:44	22-MY	29.74	29.74	1789.8

TEST PHASE : SHUTIN PERIOD # 1
FINAL FLOW PRESSURE [PSIA] = 1789.8
PRODUCING TIME [MIN] = 29.74

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
9: 6:44	22-MY	29.74	0.00	1789.8	0.0	
9: 7:44	22-MY	30.74	1.00	1800.6	10.8	1.488
9: 8:44	22-MY	31.74	2.00	1800.6	10.8	1.201
9: 9:44	22-MY	32.74	3.00	1800.6	10.8	1.038
9:10:44	22-MY	33.74	4.00	1800.6	10.8	0.926
9:11:44	22-MY	34.74	5.00	1800.6	10.8	0.842
9:12:44	22-MY	35.74	6.00	1800.6	10.8	0.775
9:13:44	22-MY	36.74	7.00	1800.6	10.8	0.720
9:14:44	22-MY	37.74	8.00	1800.6	10.8	0.674
9:15:44	22-MY	38.74	9.00	1800.6	10.8	0.634
9:16:44	22-MY	39.74	10.00	1800.6	10.8	0.599
9:18:44	22-MY	41.74	12.00	1800.6	10.8	0.541
9:20:44	22-MY	43.74	14.00	1800.6	10.8	0.495
9:22:44	22-MY	45.74	16.00	1800.6	10.8	0.456
9:24:44	22-MY	47.74	18.00	1800.6	10.8	0.424
9:26:44	22-MY	49.74	20.00	1800.6	10.8	0.396
9:28:44	22-MY	51.74	22.00	1800.6	10.8	0.371
9:30:44	22-MY	53.74	24.00	1800.6	10.8	0.350
9:32:44	22-MY	55.74	26.00	1799.8	10.0	0.331
9:34:44	22-MY	57.74	28.00	1799.0	9.1	0.314
9:36:44	22-MY	59.74	30.00	1798.1	8.3	0.299
9:41:44	22-MY	64.74	35.00	1797.1	7.3	0.267
9:46:44	22-MY	69.74	40.00	1796.4	6.6	0.241
9:51:44	22-MY	74.74	45.00	1796.2	6.3	0.220
9:56:44	22-MY	79.74	50.00	1796.2	6.3	0.203
10: 1:44	22-MY	84.74	55.00	1795.5	5.7	0.188
10: 6:44	22-MY	89.74	60.00	1795.2	5.4	0.175
10:10:53	22-MY	93.88	64.14	1797.1	7.3	0.165

TEST PHASE : FLOW PERIOD # 2

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE PRESSURE PSIA
10:10:59	22-MY	93.98	0.00	1595.8
10:15:59	22-MY	98.98	5.00	1770.5
10:20:59	22-MY	103.98	10.00	1784.2
10:25:59	22-MY	108.98	15.00	1784.3
10:30:59	22-MY	113.98	20.00	1785.7
10:35:59	22-MY	118.98	25.00	1786.0
10:40:59	22-MY	123.98	30.00	1786.4
10:45:59	22-MY	128.98	35.00	1786.4
10:50:59	22-MY	133.98	40.00	1785.6
10:55:59	22-MY	138.98	45.00	1784.7
11: 0:59	22-MY	143.98	50.00	1784.6
11: 5:59	22-MY	148.98	55.00	1784.9
11: 9:55	22-MY	152.92	58.94	1785.1

TEST PHASE : SHUTIN PERIOD # 2
FINAL FLOW PRESSURE [PSIA] = 1785.1
PRODUCING TIME [MIN] = 88.68

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
11: 9:55	22-MY	152.92	0.00	1785.1	0.0	
11:10:55	22-MY	153.92	1.00	1795.2	10.1	1.953
11:11:55	22-MY	154.92	2.00	1795.2	10.1	1.656
11:12:55	22-MY	155.92	3.00	1795.2	10.1	1.485
11:13:55	22-MY	156.92	4.00	1795.2	10.1	1.365
11:14:55	22-MY	157.92	5.00	1795.2	10.1	1.273
11:15:55	22-MY	158.92	6.00	1795.2	10.1	1.198
11:16:55	22-MY	159.92	7.00	1795.2	10.1	1.136
11:17:55	22-MY	160.92	8.00	1795.2	10.1	1.082
11:18:55	22-MY	161.92	9.00	1795.2	10.1	1.036
11:19:55	22-MY	162.92	10.00	1795.2	10.1	0.994
11:21:55	22-MY	164.92	12.00	1795.2	10.1	0.924
11:23:55	22-MY	166.92	14.00	1795.2	10.1	0.865
11:25:55	22-MY	168.92	16.00	1795.2	10.1	0.816
11:27:55	22-MY	170.92	18.00	1795.2	10.1	0.773
11:29:55	22-MY	172.92	20.00	1795.2	10.1	0.735
11:31:55	22-MY	174.92	22.00	1795.2	10.1	0.702
11:33:55	22-MY	176.92	24.00	1795.2	10.1	0.672
11:35:55	22-MY	178.92	26.00	1795.2	10.1	0.645
11:37:55	22-MY	180.92	28.00	1795.2	10.1	0.620
11:39:55	22-MY	182.92	30.00	1795.2	10.1	0.597
11:44:55	22-MY	187.92	35.00	1795.2	10.1	0.548
11:49:55	22-MY	192.92	40.00	1794.9	9.8	0.507
11:54:55	22-MY	197.92	45.00	1794.3	9.2	0.473
11:59:55	22-MY	202.92	50.00	1794.3	9.2	0.443

TEST PHASE : SHUTIN PERIOD # 2
FINAL FLOW PRESSURE [PSIA] = 1785.1
PRODUCING TIME [MIN] = 88.68

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
12: 4:55	22-MY	207.92	55.00	1794.0	8.9	0.417
12: 9:55	22-MY	212.92	60.00	1795.2	10.1	0.394
12:14:55	22-MY	217.92	65.00	1795.2	10.1	0.374
12:19:55	22-MY	222.92	70.00	1795.2	10.1	0.355
12:24:55	22-MY	227.92	75.00	1795.2	10.1	0.339
12:29:55	22-MY	232.92	80.00	1795.2	10.1	0.324
12:34:55	22-MY	237.92	85.00	1795.6	10.5	0.310
12:39:55	22-MY	242.92	90.00	1796.0	10.9	0.298
12:44:55	22-MY	247.92	95.00	1797.2	12.1	0.286
12:49:55	22-MY	252.92	100.00	1799.4	14.3	0.276
12:54:55	22-MY	257.92	105.00	1800.2	15.1	0.266
12:59:55	22-MY	262.92	110.00	1799.4	14.3	0.257
13: 4:55	22-MY	267.92	115.00	1800.0	14.9	0.248
13: 9:55	22-MY	272.92	120.00	1799.8	14.7	0.240
13:11:19	22-MY	274.32	121.40	1799.7	14.6	0.238