JS—165

JOHNSTON

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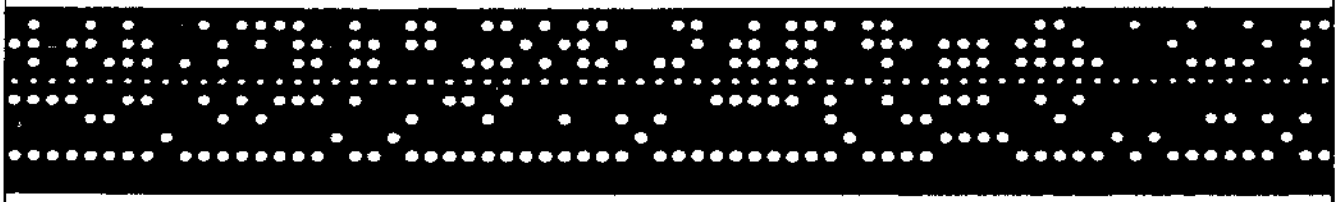
computerized data analysis



FIELD REPORT # 12061 D

COMPANY U.S.G.S./HUSKY OIL WELL LISBURNE #1 TEST NO. 3 COUNTY NORTH SLOPE STATE ALASKA

COMPANY

JOHNSTON
Schlumberger

COMPUTERIZED DATA ANALYSIS

JUNE 9, 1980

GENTLEMEN:

THE ENCLOSED TEST APPEARS TO BE A GOOD MECHANICAL DRILL STEM TEST DURING WHICH THE TOOLS DID FUNCTION PROPERLY. THE FORMATION PRODUCED ENOUGH RESERVOIR FLUID FOR PROPER IDENTIFICATION. RESERVOIR PRESSURE DRAWDOWN WAS SUFFICIENT AND ADEQUATE SHUT-IN BUILD-UPS DID OCCUR FOR RELIABLE QUANTITATIVE ANALYSIS. RESERVOIR PARAMETERS WERE CALCULATED BY THE HORNER METHOD.

1. FLOW RATE: A FLOW RATE OF 124 BBLS/DAY OF WATER WAS ESTIMATED FOR THIS TEST.

2. RESERVOIR PRESSURE: EXTRAPOLATION OF THE INITIAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 3188 P.S.I.G. AT RECORDER DEPTH.

3. PERMEABILITY: THE CALCULATED TRANSMISSIBILITY FACTOR OF 58.78 MD.-FT./CP. INDICATES AN AVERAGE EFFECTIVE PERMEABILITY TO WATER OF 3.46 MD. FOR THE REPORTED 17 FOOT NET INTERVAL. THE CALCULATIONS WERE BASED ON A SLOPE OF 343 P.S.I./LOG CYCLE OBTAINED FROM THE FINAL SHUT-IN BUILD-UP PLOT. IT WAS ASSUMED FOR THESE CALCULATIONS THE PRODUCT OF THE WATER VISCOSITY AND FORMATION VOLUME FACTOR TO BE 1.0.

4. WELLBORE DAMAGE: THE CALCULATED DAMAGE RATIO OF 0.81 INDICATES THAT NO WELLBORE DAMAGE IS PRESENT AT THE TIME AND CONDITIONS OF THIS TEST.

5. RADIUS OF INVESTIGATION: THE CALCULATED RADIUS OF INVESTIGATION OF THIS TEST IS 256 FEET BASED ON AN ASSUMED POROSITY OF 12.5%, COMPRESSIBILITY OF 4.0×10^{-6}, AND OTHER ASSUMPTIONS MADE IN NUMBER 3 ABOVE.

6. GENERAL COMMENTS: THE FORMATION EXHIBITS THE CHARACTERISTICS OF RELATIVELY GOOD PERMEABILITY EFFECTIVE TO THE RESERVOIR FLUID AND INDICATES THE ABSENCE OF WELLBORE DAMAGE. THE PRESSURE DISTURBANCE NOTED DURING THE FINAL SHUT-IN IS CAUSED BY REVERSING.

Dennis Myren

DENNIS MYREN
RESERVOIR EVALUATION
DEPARTMENT

U.S.G.S./HUSKY OIL COMPANY
LISBURNE #1; NORTH SLOPE, ALASKA
TEST #3; 7645' TO 7662'
LOCATION: SEC. 17 - T11S - R16W, UM

FIELD REPORT # 12061 D

Reservoir Engineering Data

JOHNSTON

Recorder No. J-109 Field Report No. 12061 D

Damage Ratio	DR	0.81		Effective Transmissibility TO WATER	$\frac{Kh}{\mu B}$	58.78	$\frac{Md\text{-}ft.}{Cp.}$
Maximum Reservoir Pressure INITIAL SHUT-IN	P_o	3188	P.S.I.G.	Effective Transmissability	$\frac{Kh}{\mu B}$	-	$\frac{Md\text{-}ft.}{Cp.}$
Slope of Shut-in Curve FINAL SHUT-IN	M	343	PSI/log cycle	Flow Rate ESTIMATED	Q	124	Bbl./day
Potentiometric Surface (Datum Plane, Sea Level)	PS	1638	ft.	Pressure Gradient		0.420	PSI ft.
Productivity Index	PI	0.084	Bbl./day/PSI	Gas Oil Ratio	GOR	-	CF/Bbl.
Radius of Investigation		256	ft.	K (Effective to WATER)		3.46	Md.

SLOPE M = 3093 - 2750 = 343

Assumptions made for Calculations for Liquid Recoveries

1. Q is averaged at a constant rate.
2. P_f is formation flowing pressure at a constant rate.
3. Formation flow is taken as single phase flow.
   If gas is produced at surface, phase separation is assumed to have occurred in drill pipe.
4. Radial flow is assumed.
5. For the purpose of calculating EDR where specific reservoir parameters are not available it is assumed that:

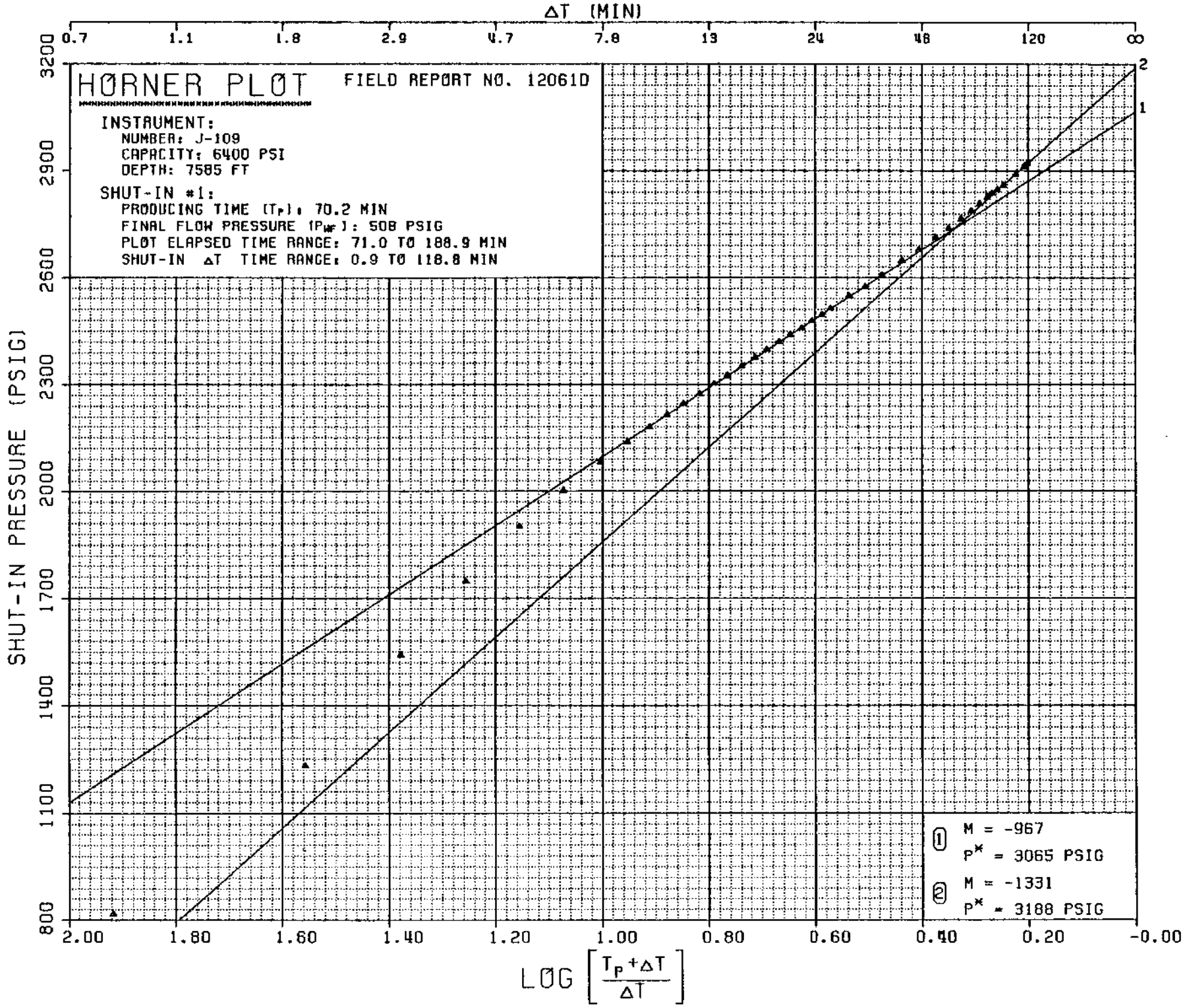
Effective permeability, K, will fall between	1 to 200 md
Formation porosity, ϕ, will fall between	0.1 to 0.3
Fluid compressibility, c, will fall between	10^{-4} to 10^{-6}
Fluid viscosity, μ, will fall between	0.05 to 50 cp.
Well bore radius, r_w, will fall between	$3\frac{7}{8}$" to $4\frac{1}{2}$"
Which gives an average value for the function log $\frac{K}{\phi\mu c r_w^2}$ of	5.5

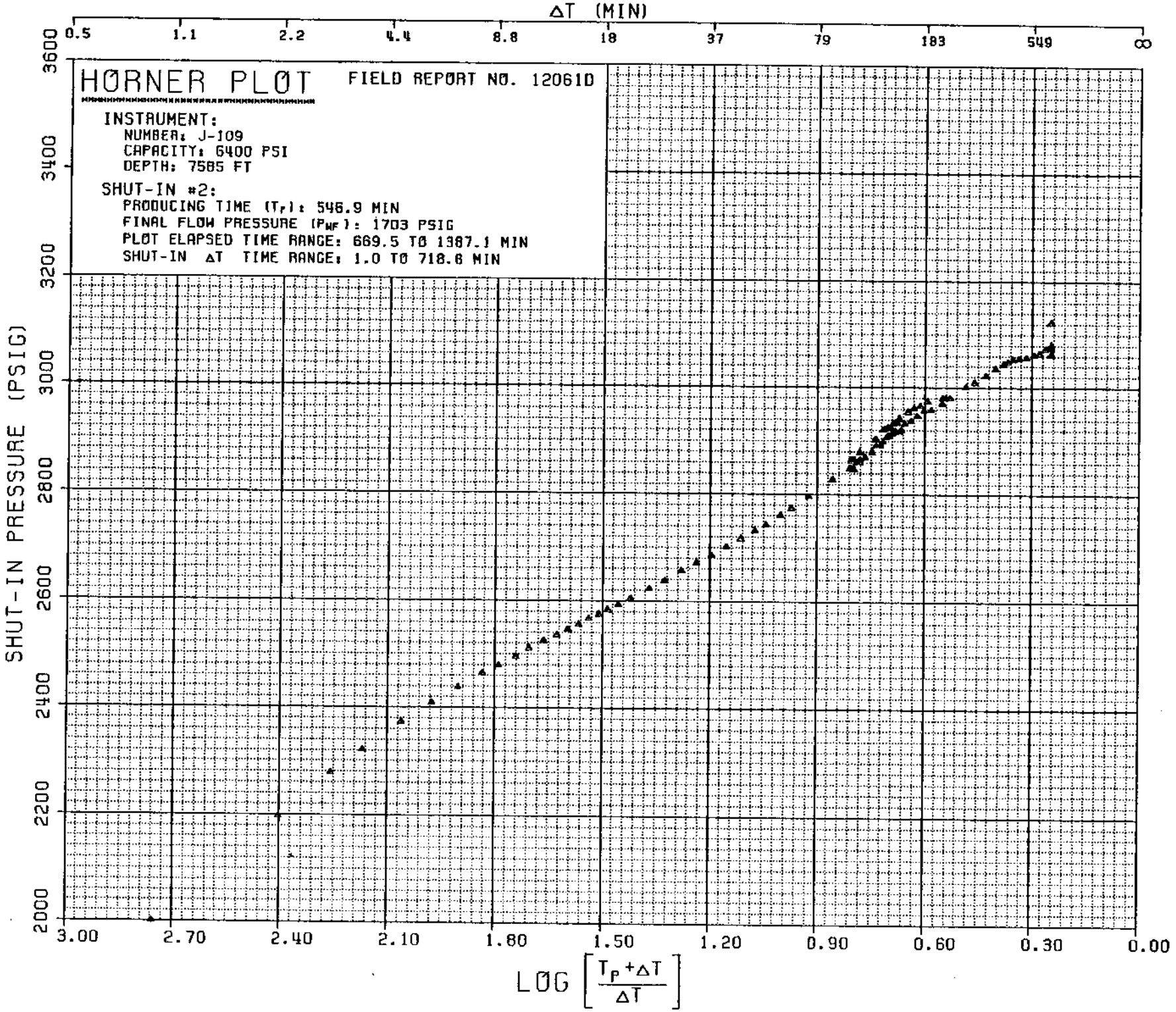
6. Other standard radial flow, equilibrium assumptions.

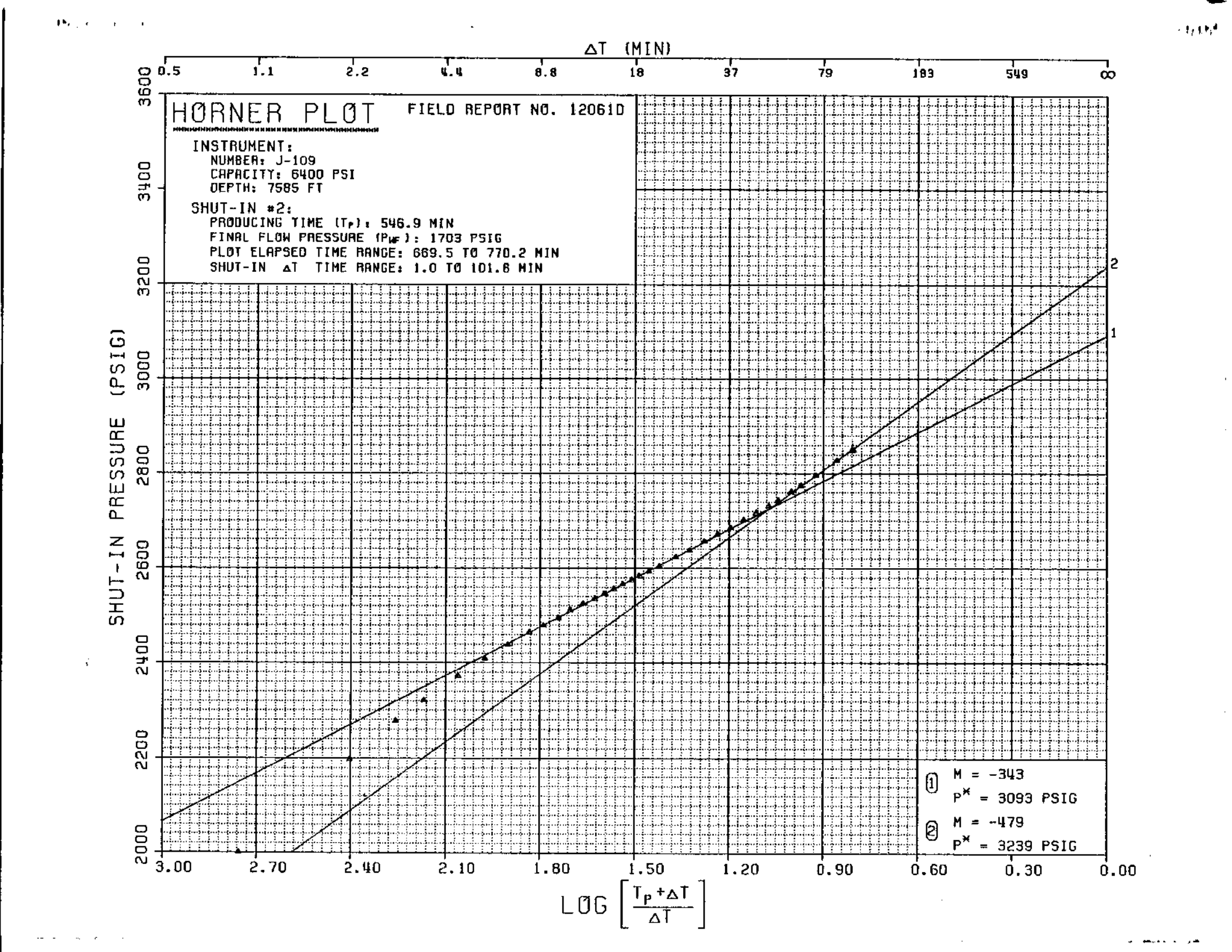
Empirical Equations:

1. $EDR = \frac{P_o - P_f}{M(\log T + 2.65)}$ where $M = \frac{P_1 - P_{10}}{\text{Log Cycle}}$
2. Transmissibility $\frac{Kh}{\mu\beta} = \frac{162.6\ Q}{M}$
3. DST $J = \frac{Q}{P_o - P_f}$ Theoretical $J = \frac{7.08 \times 10^{-3}\ Kh}{\mu\beta \ln (r_e/r_w)}$ Assumed $\ln (r_e/r_w) = 7.60$
4. P.S. = [$P_o \times 2.309$ ft./PSI] - [Recorder depth to sea level.]
5. Radius of investigation, $r_i = \sqrt{\frac{Kt}{40\phi\mu c}}$ where t = time in days

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.


ΔT (MIN)
0.7
1.1
1.8
2.9
4.7
7.8
13
24
48
120
∞
HØRNER PLØT
FIELD REPØRT NØ. 12061D
INSTRUMENT:
NUMBER: J-109
CAPACITY: 6400 PSI
DEPTH: 7585 FT
SHUT-IN #1:
PRODUCING TIME (Tp): 70.2 MIN
FINAL FLOW PRESSURE (Pwf): 508 PSIG
PLØT ELAPSED TIME RANGE: 71.0 TØ 188.9 MIN
SHUT-IN ΔT TIME RANGE: 0.9 TØ 118.8 MIN
SHUT-IN PRESSURE (PSIG)
3200
2900
2600
2300
2000
1700
1400
1100
800
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
-0.00
LØG [(Tp+ΔT)/ΔT]
1
2
① M = -967
P* = 3065 PSIG
② M = -1331
P* = 3188 PSIG


ΔT (MIN)
0.5
1.1
2.2
4.4
8.8
18
37
79
183
549
∞
HØRNER PLØT
FIELD REPORT NØ. 120610
INSTRUMENT:
NUMBER: J-109
CAPACITY: 6400 PSI
DEPTH: 7585 FT
SHUT-IN #2:
PRODUCING TIME (T_P): 546.9 MIN
FINAL FLOW PRESSURE (P_{WF}): 1703 PSIG
PLØT ELAPSED TIME RANGE: 669.5 TØ 1387.1 MIN
SHUT-IN ΔT TIME RANGE: 1.0 TØ 718.6 MIN
SHUT-IN PRESSURE (PSIG)
3600
3400
3200
3000
2800
2600
2400
2200
2000
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
LØG $\left[\frac{T_P+\Delta T}{\Delta T}\right]$


ΔT (MIN)
0.5
1.1
2.2
4.4
8.8
18
37
79
183
549
∞
HØRNER PLØT
FIELD REPORT NØ. 12061D
INSTRUMENT:
NUMBER: J-109
CAPACITY: 6400 PSI
DEPTH: 7585 FT
SHUT-IN #2:
PRODUCING TIME (T_P): 546.9 MIN
FINAL FLOW PRESSURE (P_{WF}): 1703 PSIG
PLØT ELAPSED TIME RANGE: 669.5 TØ 770.2 MIN
SHUT-IN ΔT TIME RANGE: 1.0 TØ 101.6 MIN
SHUT-IN PRESSURE (PSIG)
3600
3400
3200
3000
2800
2600
2400
2200
2000
1
2
① M = -343
P* = 3093 PSIG
② M = -479
P* = 3239 PSIG
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
LØG [(Tp+ΔT)/ΔT]

FIELD REPORT NO. 12061D

INSTRUMENT:

NUMBER: J-109

CAPACITY: 6400 PSI

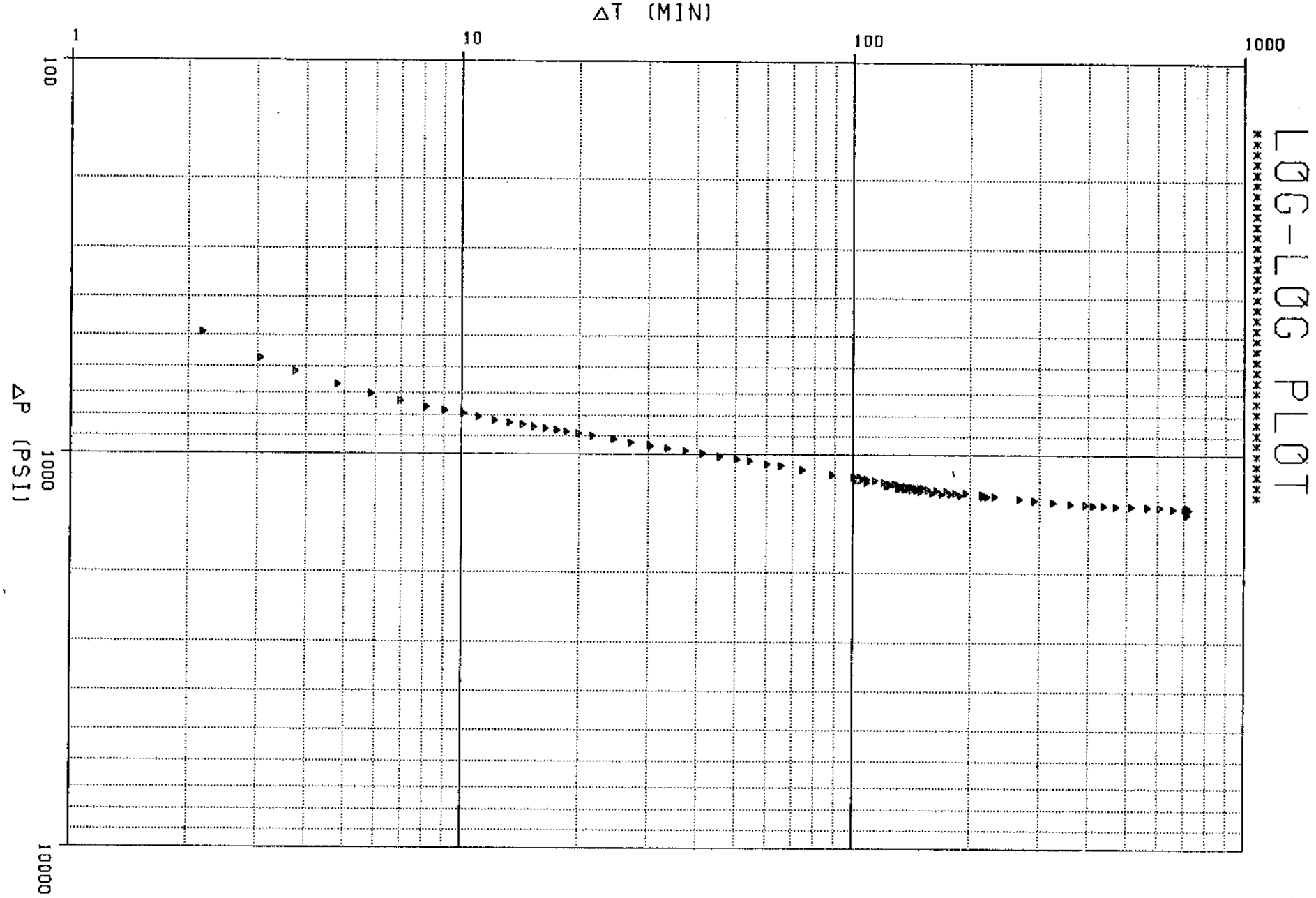
DEPTH: 7585 FT

SHUT-IN #2:

FINAL FLOW PRESSURE (P_{WF}): 1703 PSIG

PLOT ELAPSED TIME RANGE: 670.7 TO 1387.1 MIN

SHUT-IN ΔT TIME RANGE: 2.2 TO 718.6 MIN



WELL IDENTIFICATION

COMPANY:	U.S.G.S./HUSKY OIL COMPANY 2525 C. STREET; SUITE 400 ANCHORAGE, ALASKA 99503	CUSTOMER:	HUSKY OIL COMPANY
WELL:	LISBURNE #1	LOCATION:	SEC.17 T11S R16W, UM
TEST INTERVAL:	7645' TO 7662'	FIELD:	NPR (WILD CAT)
TEST NO:	3	TEST DATE:	5-28-80
COUNTY:	NORTH SLOPE	STATE:	ALASKA
TECHNICIAN:	NEWCOMB (KENAI)	TEST APPROVED BY:	MR. D.L. WESTER

EQUIPMENT AND HOLE DATA

TEST TYPE:	M.F.E. CASING		DRILL PIPE LENGTH:	-	FT.
			DRILL PIPE I.D.:		IN.
ELEVATION:	1862 K.B.	FT.	DRILL COLLAR LENGTH:	-	FT.
TOTAL DEPTH:	7680	FT.	DRILL COLLAR I.D.:	-	IN.
MAIN HOLE/CASING SIZE:	9 5/8	IN.	PACKER DEPTHS:	7610 &	FT.
RAT HOLE/LINER SIZE:	-	IN.		&	FT.
FORMATION TESTED:	LISBURNE			&	FT.
NET PROD. INTERVAL:	17	FT.	DEPTHS REF. TO:	KELLY BUSHING	
POROSITY:	12.5	%			

TEST TOOL CHAMBER DATA

SAMPLER PRESSURE:	-	PSIG
RECOVERED OIL GRAVITY:	API @	DEG. F.
RECOVERY GOR:		FT3/BBL.

SAMPLE CHAMBER CONTENTS

FLUID	VOLUME	MEAS. RESIST. (OHM-M)	MEAS. TEMP. (DEG F.)	CHLOR. (PPM)
GAS:	2.14 FT.3			
OIL:	CC			
WATER:	1960 CC			
MUD:	CC			
FILTRATE:				
TOTAL LIQUID:	1960 CC			

MUD DATA

TYPE:	LIGNOSULFATE
WEIGHT:	10.2 LB/GAL.
VISCOSITY:	38 SEC.
WATER LOSS:	7.0 CC

FLUID	RESIST (OHM-M)	TEMP (DEG F)	CHLOR (PPM)
MUD:	-	-	
FILTRATE:	-	-	-

REMARKS

NO. OF REPORTS REQUESTED: 5

FIELD REPORT NO. 1206ID

SURFACE INFORMATION

DESCRIPTION(RATE OF FLOW)	TIME	PRESSURE PSIG	SURFACE CHOKE
SET PACKER (5-28-8Ø)	1755	-	-
OPENED TOOL	18Ø4	-	1/4"
CLOSED FOR INITIAL SHUT-IN	1911	-	"
FINISHED SHUT-IN	2111	-	"
RE-OPENED TOOL	2113	-	"
CLOSED FOR FINAL SHUT-IN (5-29-8Ø)	Ø511	-	"
STARTED REVERSING	Ø7ØØ	-	"
PULLED PACKER LOOSE	1712	-	"

CUSHION TYPE: - - FT - PSIG 3/4 IN. BOTTOM CHOKE

RECOVERY INFORMATION

RECOVERY	FEET	BARRELS	%OIL	%WATER	%OTHERS	API GRAV.	DEG.	RESIST	DEG.	CHL PPM
-	-	-								

FIELD REPORT NO. 12Ø61D

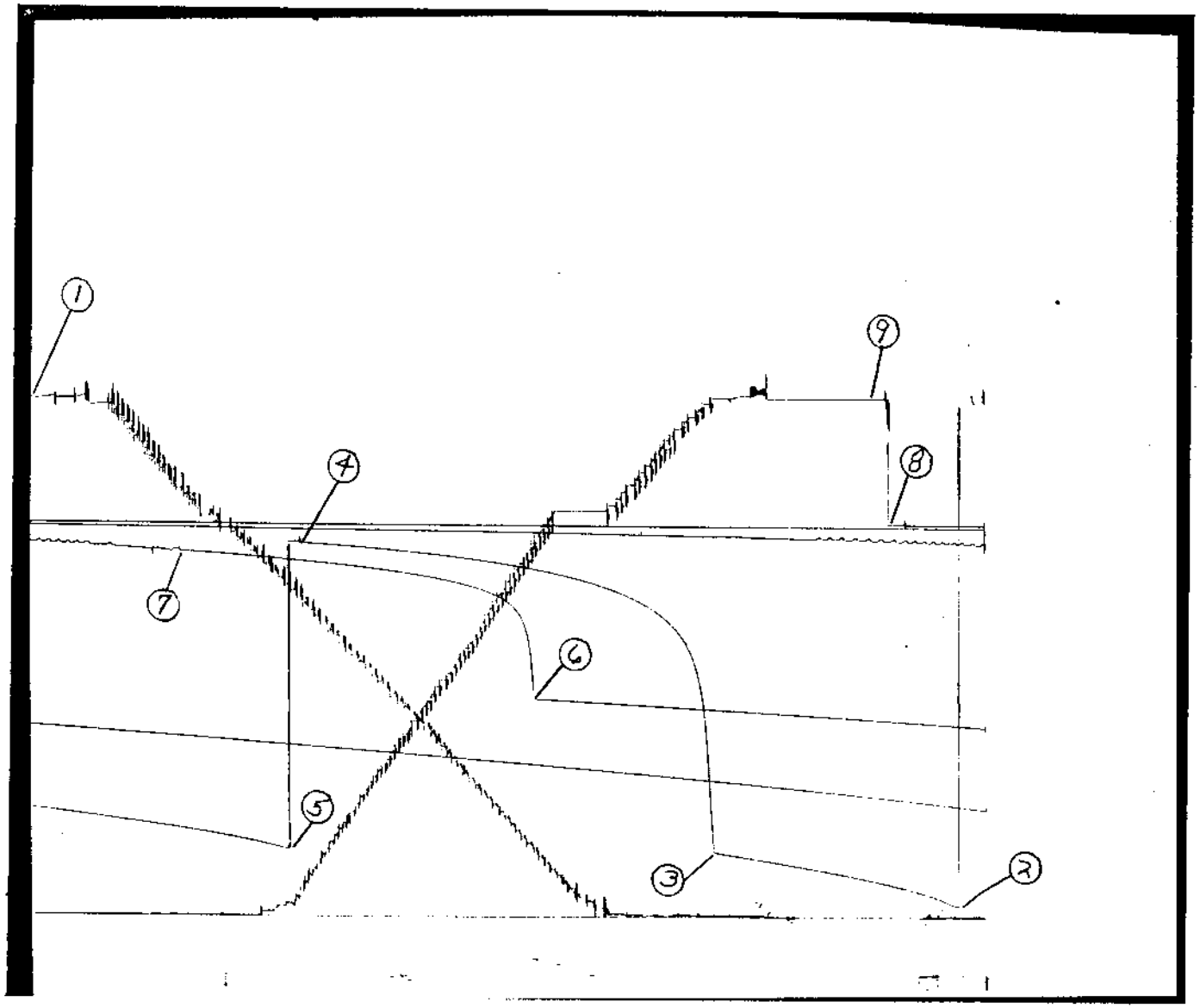
FIELD REPORT NO.: 12061 D

CAPACITY: 6400#

INSTRUMENT NO.: J-109

NUMBER OF REPORTS: 5+

JOHNSTON Schlumberger

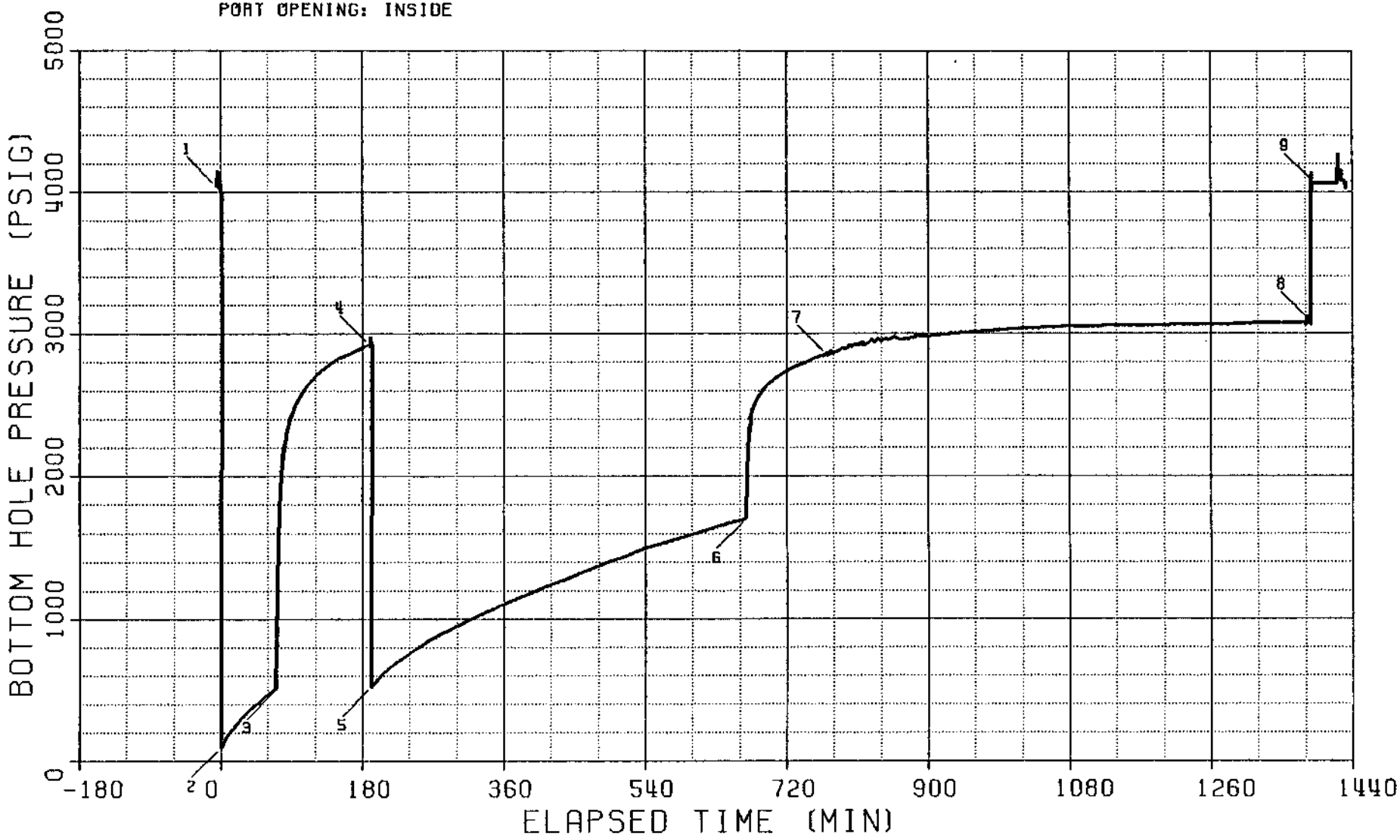


PRESSURE LOG

FIELD REPORT NO. 12061D

INSTRUMENT:

NUMBER: J-109
CAPACITY: 6400 PSI
DEPTH: 7585 FT
PORT OPENING: INSIDE



BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-109 CAPACITY (PSI): 6400 DEPTH (FT): 7585
PORT OPENING: INSIDE BOTTOM HOLE TEMP (F): 120

EXPLANATION	LABELED POINT	PRESSURE (PSIG)	ELAPSED TIME (MIN)
HYDROSTATIC MUD	1	4043	-6.0
START FLOW	2	98	0.0
END FLOW & START SHUT-IN	3	508	70.2
END SHUT-IN	4	2920	188.9
START FLOW	5	526	191.9
END FLOW & START SHUT-IN	6	1703	668.5
STARTED REVERSING	7	2850	770.2
END SHUT-IN	8	3080	1387.1
HYDROSTATIC MUD	9	4063	1391.7

* SUMMARY OF FLOW PERIODS *

FLOW PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF FLOW (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)
1	0.0	70.2	70.2	98	508
2	191.9	668.5	476.7	526	1703

* SUMMARY OF SHUT-IN PERIODS *

SHUT-IN PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF SHUT-IN (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)	FINAL FLOW PRESSURE (PSIG)	PRODUCING TIME (MIN)
1	70.2	188.9	118.8	508	2920	508	70.2
2	668.5	1387.1	718.6	1703	3080	1703	546.9

FIELD REPORT NO. 12061D
INSTRUMENT NO. J-109

TEST PHASE : FLOW PERIOD # 1

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
0.0	0.0	98
10.0	10.0	193
20.0	20.0	263
30.0	30.0	321
40.0	40.0	374
50.0	50.0	424
60.0	60.0	469
70.0	70.0	508
70.2	70.2	508

TEST PHASE : SHUT-IN PERIOD # 1

1. FINAL FLOW PRESSURE ["P_{WF}"] = 508 PSIG
2. PRODUCING TIME ["T_P"] = 70.2 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P +DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
70.2	0.0	508		0
71.2	1.0	869	1.852	361
72.2	2.0	1232	1.557	724
73.2	3.0	1520	1.387	1012
74.2	4.0	1724	1.268	1216
75.2	5.0	1865	1.177	1357
76.2	6.0	1962	1.104	1454
77.2	7.0	2036	1.042	1528
78.2	8.0	2096	0.990	1588
79.2	9.0	2147	0.944	1639
80.2	10.0	2189	0.904	1681
82.2	12.0	2258	0.836	1750
84.2	14.0	2311	0.779	1803
86.2	16.0	2359	0.731	1851
88.2	18.0	2399	0.690	1891
90.2	20.0	2433	0.654	1925
92.2	22.0	2462	0.622	1954
94.2	24.0	2490	0.594	1982
96.2	26.0	2516	0.568	2008
98.2	28.0	2538	0.545	2030
100.2	30.0	2558	0.524	2050
105.2	35.0	2603	0.478	2095
110.2	40.0	2644	0.440	2136
115.2	45.0	2675	0.408	2167
120.2	50.0	2704	0.381	2196

FIELD REPORT NO. 12061D
INSTRUMENT NO. J-109

TEST PHASE : SHUT-IN PERIOD # 1

1. FINAL FLOW PRESSURE ["P_{WF}"] = 508 PSIG
2. PRODUCING TIME ["T_P"] = 70.2 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T +DT)/DT] P	DELTA PRESSURE [P_{WS} - P_{WF}]
125.2	55.0	2729	0.357	2221
130.2	60.0	2753	0.336	2245
135.2	65.0	2774	0.318	2266
140.2	70.0	2794	0.302	2286
145.2	75.0	2813	0.287	2305
150.2	80.0	2829	0.274	2321
155.2	85.0	2842	0.261	2334
160.2	90.0	2854	0.250	2346
165.2	95.0	2866	0.240	2358
170.2	100.0	2879	0.231	2371
175.2	105.0	2892	0.222	2384
180.2	110.0	2903	0.214	2395
185.2	115.0	2913	0.207	2405
188.9	118.8	2920	0.202	2412

TEST PHASE : FLOW PERIOD # 2

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
191.9	0.0	526
201.9	10.0	593
211.9	20.0	646
221.9	30.0	690
231.9	40.0	729
241.9	50.0	766
251.9	60.0	803
261.9	70.0	839
271.9	80.0	872
281.9	90.0	901
291.9	100.0	929
301.9	110.0	957
311.9	120.0	984
321.9	130.0	1011
331.9	140.0	1035
341.9	150.0	1060
351.9	160.0	1085
361.9	170.0	1110
371.9	180.0	1135
381.9	190.0	1157

FIELD REPORT NO. 12061D
INSTRUMENT NO. J-109

TEST PHASE : FLOW PERIOD # 2

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
391.9	200.0	1180
401.9	210.0	1204
411.9	220.0	1228
421.9	230.0	1250
431.9	240.0	1271
441.9	250.0	1291
451.9	260.0	1313
461.9	270.0	1335
471.9	280.0	1357
481.9	290.0	1377
491.9	300.0	1397
501.9	310.0	1417
511.9	320.0	1436
521.9	330.0	1458
531.9	340.0	1479
541.9	350.0	1498
551.9	360.0	1516
561.9	370.0	1532
571.9	380.0	1548
581.9	390.0	1563
591.9	400.0	1581
601.9	410.0	1599
611.9	420.0	1615
621.9	430.0	1630
631.9	440.0	1645
641.9	450.0	1662
651.9	460.0	1677
661.9	470.0	1692
668.5	476.7	1703

TEST PHASE : SHUT-IN PERIOD # 2

1. FINAL FLOW PRESSURE ["P_{WF}"] = 1703 PSIG
2. PRODUCING TIME ["T_P"] = 546.9 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P +DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
668.5	0.0	1703		0
669.5	1.0	2007	2.739	304
670.5	2.0	2169	2.438	465
671.5	3.0	2273	2.263	570
672.5	4.0	2334	2.139	631

FIELD REPORT NO. 12061D
INSTRUMENT NO. J-109

TEST PHASE : SHUT-IN PERIOD # 2

1. FINAL FLOW PRESSURE ["P_{WF}"] = 1703 PSIG
2. PRODUCING TIME ["T_P"] = 546.9 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
673.5	5.Ø	238Ø	2.Ø43	677
674.5	6.Ø	2413	1.964	71Ø
675.5	7.Ø	2439	1.898	736
676.5	8.Ø	2461	1.841	758
677.5	9.Ø	2478	1.791	775
678.5	1Ø.Ø	2494	1.746	79Ø
68Ø.5	12.Ø	2523	1.668	82Ø
682.5	14.Ø	2544	1.6Ø3	841
684.5	16.Ø	2563	1.546	86Ø
686.5	18.Ø	2579	1.497	876
688.5	2Ø.Ø	2593	1.452	89Ø
69Ø.5	22.Ø	26Ø7	1.413	9Ø4
692.5	24.Ø	262Ø	1.376	917
694.5	26.Ø	2632	1.343	929
696.5	28.Ø	2643	1.312	94Ø
698.5	3Ø.Ø	2654	1.284	951
7Ø3.5	35.Ø	2676	1.221	973
7Ø8.5	4Ø.Ø	2696	1.166	993
713.5	45.Ø	2714	1.119	1Ø11
718.5	5Ø.Ø	273Ø	1.Ø77	1Ø27
723.5	55.Ø	2745	1.Ø39	1Ø42
728.5	6Ø.Ø	276Ø	1.ØØ5	1Ø57
743.5	75.Ø	2799	Ø.919	1Ø95
758.5	9Ø.Ø	2832	Ø.85Ø	1128
773.5	1Ø5.Ø	2855	Ø.793	1152
788.5	12Ø.Ø	2885	Ø.745	1182
8Ø3.5	135.Ø	2922	Ø.7Ø3	1218
818.5	15Ø.Ø	2926	Ø.667	1222
833.5	165.Ø	2948	Ø.635	1244
848.5	18Ø.Ø	2961	Ø.6Ø6	1257
863.5	195.Ø	2959	Ø.58Ø	1256
878.5	21Ø.Ø	2968	Ø.557	1265
893.5	225.Ø	2979	Ø.535	1276
9Ø8.5	24Ø.Ø	2986	Ø.516	1283
923.5	255.Ø	2995	Ø.498	1291
938.5	27Ø.Ø	3ØØ3	Ø.481	1299
953.5	285.Ø	3ØØ8	Ø.465	13Ø5
968.5	3ØØ.Ø	3Ø13	Ø.451	131Ø
983.5	315.Ø	3Ø19	Ø.437	1315
998.5	33Ø.Ø	3Ø24	Ø.424	1321
1Ø13.5	345.Ø	3Ø3Ø	Ø.412	1327
1Ø28.5	36Ø.Ø	3Ø36	Ø.4Ø1	1332

FIELD REPORT NO. 12061D
INSTRUMENT NO. J-109

TEST PHASE : SHUT-IN PERIOD # 2

1. FINAL FLOW PRESSURE ["P_{WF}"] = 1703 PSIG
2. PRODUCING TIME ["T_P"] = 546.9 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
1043.5	375.0	3040	0.391	1336
1058.5	390.0	3043	0.381	1340
1073.5	405.0	3047	0.371	1343
1088.5	420.0	3050	0.362	1346
1103.5	435.0	3053	0.354	1349
1118.5	450.0	3054	0.345	1351
1133.5	465.0	3055	0.338	1352
1148.5	480.0	3056	0.330	1352
1163.5	495.0	3056	0.323	1353
1178.5	510.0	3056	0.316	1353
1193.5	525.0	3057	0.310	1354
1208.5	540.0	3059	0.304	1355
1223.5	555.0	3060	0.298	1357
1238.5	570.0	3061	0.292	1358
1253.5	585.0	3063	0.287	1359
1268.5	600.0	3064	0.281	1360
1283.5	615.0	3066	0.276	1362
1298.5	630.0	3068	0.271	1365
1313.5	645.0	3071	0.267	1368
1328.5	660.0	3073	0.262	1370
1343.5	675.0	3074	0.258	1370
1358.5	690.0	3074	0.253	1371
1373.5	705.0	3075	0.249	1372
1387.1	718.6	3080	0.246	1377

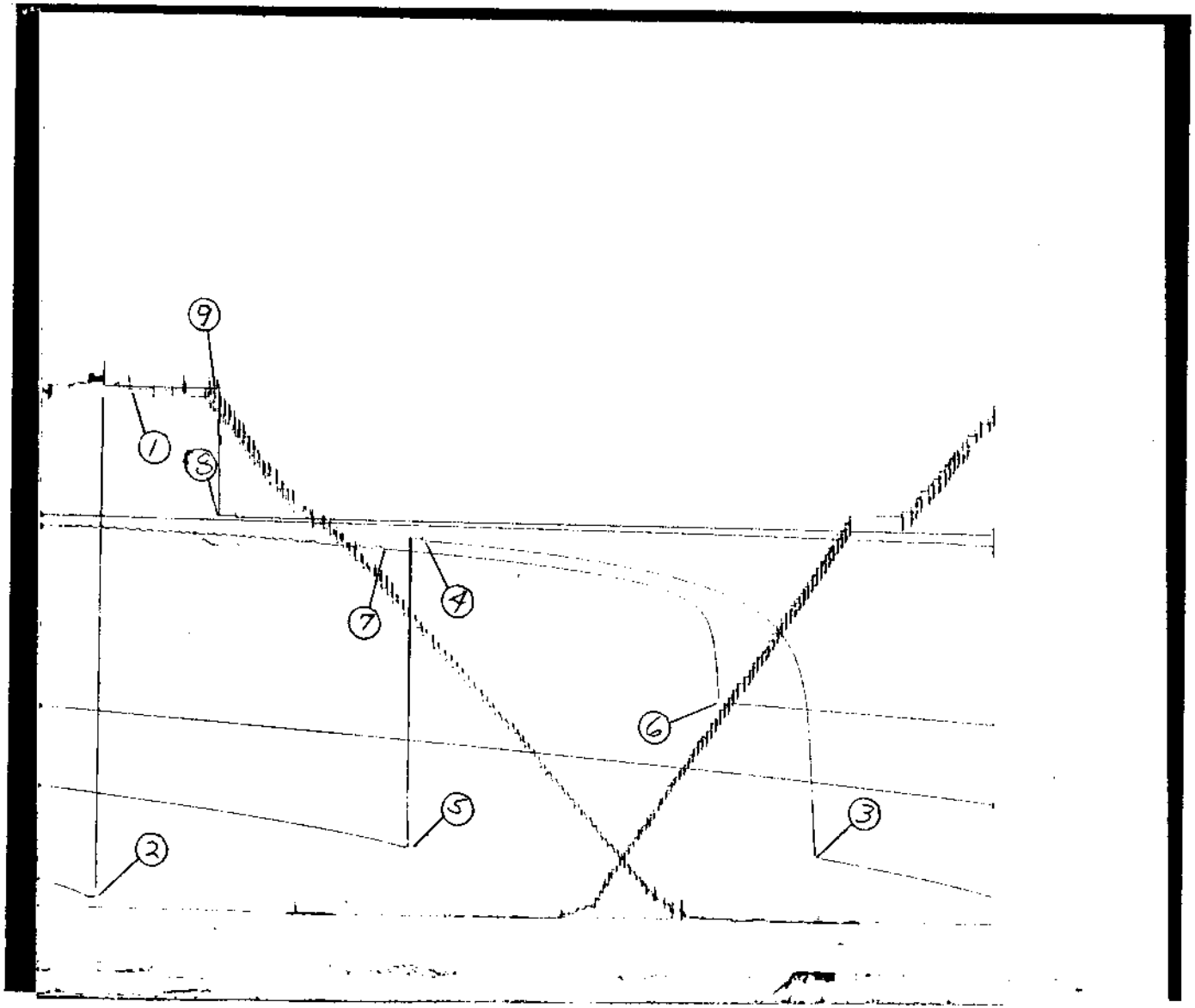
FIELD REPORT NO.: 12061 D

CAPACITY: 6400#

INSTRUMENT NO.: J-313

NUMBER OF REPORTS: 5+

JOHNSTON Schlumberger



BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-313 CAPACITY (PSI): 6400 DEPTH (FT): 7589
PORT OPENING: INSIDE BOTTOM HOLE TEMP (F): 120

EXPLANATION	LABELED POINT	PRESSURE (PSIG)
HYDROSTATIC MUD	1	4057
START FLOW	2	110
END FLOW & START SHUT-IN	3	528
END SHUT-IN	4	2933
START FLOW	5	549
END FLOW & START SHUT-IN	6	1728
STARTED REVERSING	7	2865
END SHUT-IN	8	3097
HYDROSTATIC MUD	9	4083

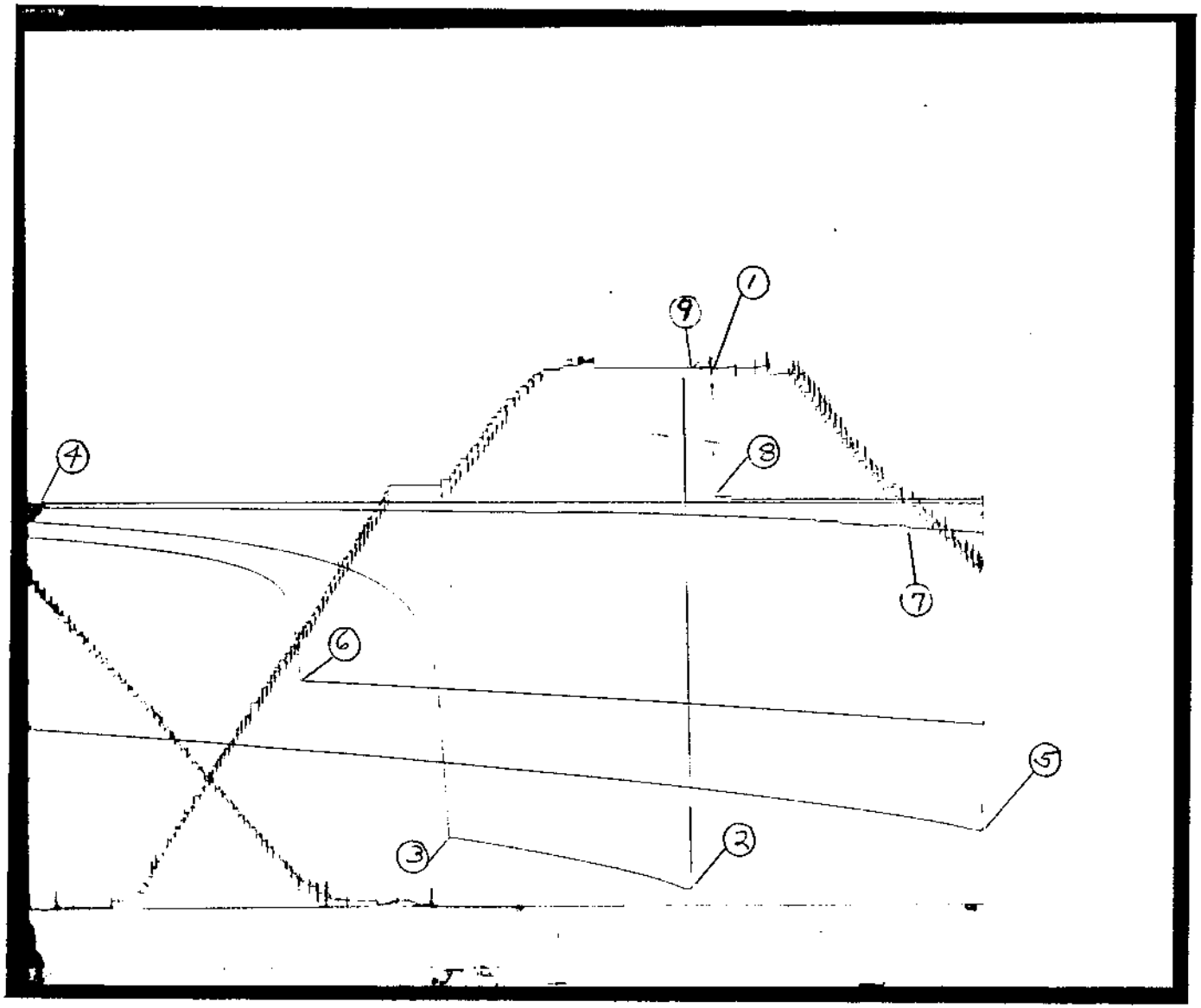
FIELD REPORT NO.: 12061 D

CAPACITY: 6400#

JOHNSTON Schlumberger

INSTRUMENT NO.: J-867

NUMBER OF REPORTS: 5+



J6-167

BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-867 CAPACITY (PSI): 6400 DEPTH (FT): 7635
PORT OPENING: OUTSIDE BOTTOM HOLE TEMP (F): 124

EXPLANATION	LABELED POINT	PRESSURE (PSIG)
HYDROSTATIC MUD	1	4068
START FLOW	2	133
END FLOW & START SHUT-IN	3	533
END SHUT-IN	4	2930
START FLOW	5	561
END FLOW & START SHUT-IN	6	1728
STARTED REVERSING	7	2862
END SHUT-IN	8	3103
HYDROSTATIC MUD	9	4082