

MILLER TESTING COMPANY

Box 547

GREAT BEND, KANSAS

Company THUNDERBIRD DRILLING INC.

Lease and Well No. PFANNENSTEIL D-1

County NESS State KANSAS Date SEPT 22, 1970

Formation Test No. 1 Total Depth 3812 Elev. _____
Interval Tested 3795 To 3812 Anchor Length 17'
Size Hole 7 7/8 Size Drill Pipe 4 1/2 FH Size Packer 6 3/4
Mud Weight 9.7 Viscosity 38 Water Loss 15.8 c.c. Bottom Hole Temp. 112 °F
Chokes: Top 1/2 Bottom 1/2 Ticket No. 10754
Length of Drill Collar _____ I. D. _____ Length Flexweight 810 I. D. 2.76

RECOVERY

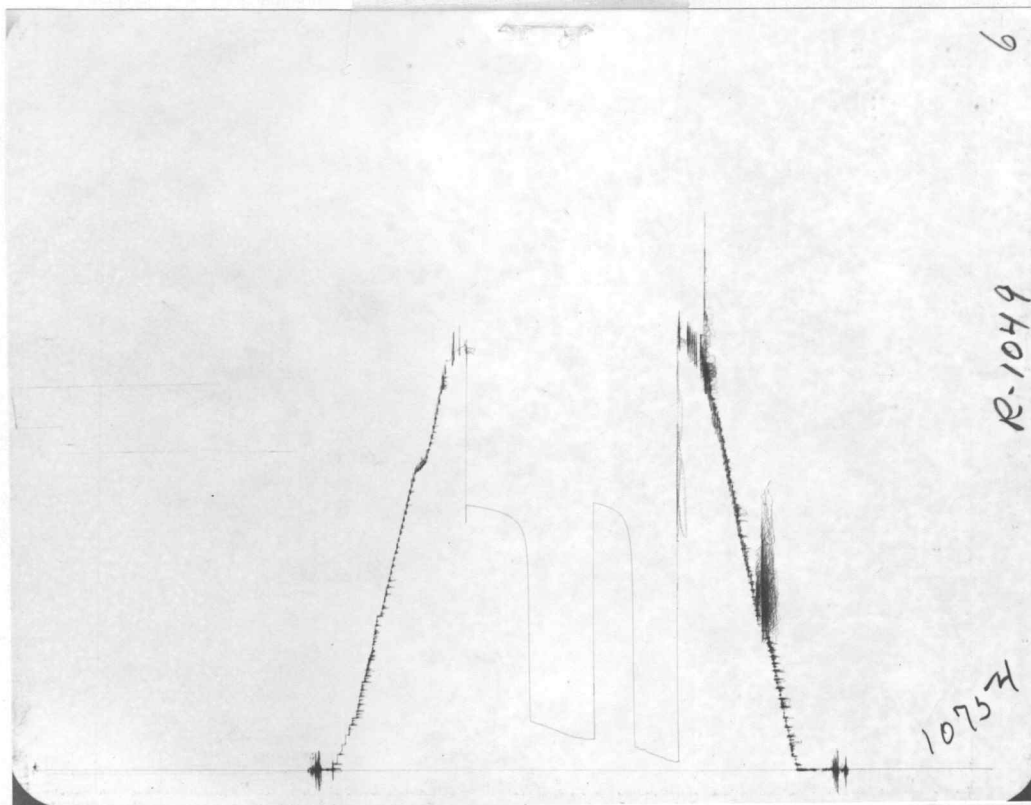
FAIR BLOW THROUGHOUT TEST.

440 FEET OF MUDDY WATER.

USED 2 PACKERS

Lease and Well No. PFANNENSTEIL D-1 1 18S 24W C SW NE

Formation Test No. 1



Tool Open: 1st Flow hr. 30 mins: Shut-in Initial hr. 30 min: 2nd Flow hr. 45 min: Shut-in Final hr. 45 min.

	Field Reading	Corrected Reading
(A) Initial Hydrostatic Pressure	<u>2029</u>	<u>2031</u>
(B) Initial 1st Flow Pressure	<u>36</u>	<u>37</u>
(C) Final 1st Flow Pressure	<u>109</u>	<u>114</u>
(D) Initial Shut-in Pressure	<u>1244</u>	<u>1263</u>
(E) Initial 2nd Flow Pressure	<u>146</u>	<u>146</u>
(F) Final 2nd Flow Pressure	<u>219</u>	<u>229</u>
(G) Final Shut-in Pressure	<u>1244</u>	<u>1254</u>
(H) Final Hydrostatic Pressure	<u>2014</u>	<u>2013</u>

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GREAT BEND, KANSAS

Company THUNDERBIRD DRILLING INC.

Lease and Well No. PFANNENSTEIL D-1

County NESS State KANSAS Date SEPT 23, 1970

Formation Test No. 2 Total Depth 3995 Elev. _____

Interval Tested 3950 To 3995 Anchor Length 45'

Size Hole 7 7/8 Size Drill Pipe 4 1/2 FH Size Packer 6 3/4

Mud Weight 9.7 Viscosity 38 Water Loss 9 c.c. Bottom Hole Temp. 110 °F

Chokes: Top 1/2 Bottom 1/2 Ticket No. 10755

Length of Drill Collar _____ I. D. _____ Length Flexweight 810 I. D. 2.76

RECOVERY

WEAK BLOW FOR 36 MINUTES. FLUSHED TOOL IN 15 MINUTES ON SECOND
OPENING. WEAK BLOW FOR 7 MINUTES.

80 FEET OF MUD.

USED 2 PACKERS

Lease and Well No. PFANNENSTEIL D-1 1 18S 24W C SW NE

Formation Test No. 2

DATE SEPT 23, 1970

LEASE PFANNENSTEIL WELL NO. D-1

TEST NO. 2

TICKET NO. 10755

	TIME	PSI
INITIAL HYDRO MUD PRESSURE		2159
INITIAL CLOSED IN PRESSURE	30 mins.	1305
INITIAL FLOW	30 mins.	46 to 86
FINAL FLOW	30 mins.	88 to 101
FINAL CLOSED IN PRESSURE	30 mins.	1277
FINAL HYDRO MUD PRESSURE		2141

TOTAL DEPTH 3995

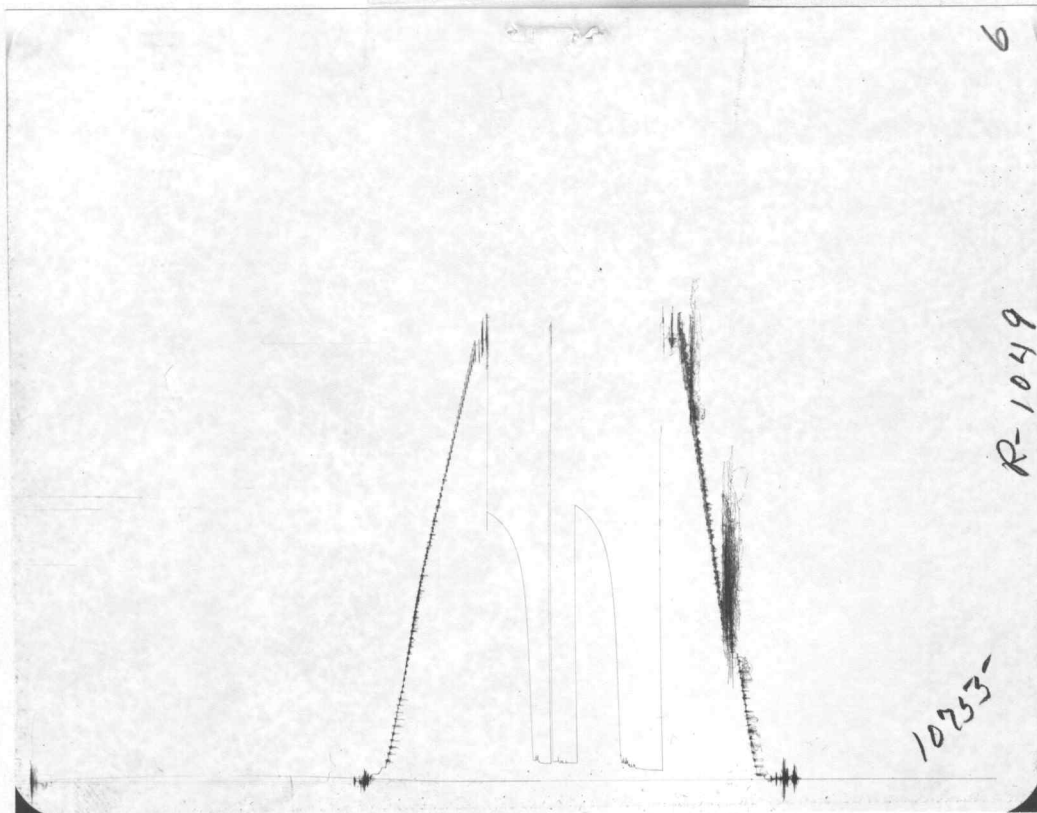
PACKER DEPTH 3944 and 3950

BT. NO. 1049 DEPTH 3990

1ST FLOW PRESSURE			INITIAL CIP		2ND FLOW PRESSURE		FINAL CIP	
		46		86		88		101
		49		1080		88		1043
		51		1171		88		1135
		55		1231		92		1195
		60		1259		92		1231
		73		1290		92		1259
		86		1305		101		1277
	5 MINUTE INTERVAL		5 MINUTE INTERVAL		5 MINUTE INTERVAL		5 MINUTE INTERVAL	

REMARKS _____

SPECIAL PRESSURE DATA



Tool Open: 1st Flow 30 mins: Shut-in Initial 30 min: 2nd Flow 30 min: Shut-in Final 30 min

	Field Reading	Corrected Reading
(A) Initial Hydrostatic Pressure	<u>2141</u>	<u>2159</u>
(B) Initial 1st Flow Pressure	<u>45</u>	<u>46</u>
(C) Final 1st Flow Pressure	<u>73</u>	<u>86</u>
(D) Initial Shut-in Pressure	<u>1299</u>	<u>1305</u>
(E) Initial 2nd Flow Pressure	<u>82</u>	<u>88</u>
(F) Final 2nd Flow Pressure	<u>91</u>	<u>101</u>
(G) Final Shut-in Pressure	<u>1262</u>	<u>1277</u>
(H) Final Hydrostatic Pressure	<u>2119</u>	<u>2141</u>

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GREAT BEND, KANSAS

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Lease and Well No. PFANNENSTEIL D-1

County NESS State KANSAS Date SEPT 25, 1970

Formation Test No. 3 Total Depth 4300 Elev. _____

Interval Tested 4230 To 4300 Anchor Length 70'

Size Hole 7 7/8 Size Drill Pipe 4 1/2 FH Size Packer 6 3/4

Mud Weight 9.8 Viscosity 39 Water Loss 6 c.c. Bottom Hole Temp. _____ °F

Chokes: Top 1/2 Bottom 1/2 Ticket No. 10756

Length of Drill Collar _____ I. D. _____ Length Flexweight 810 I. D. 2.76

RECOVERY

WEAK STEADY BLOW THROUGHOUT TEST.

90 FEET OF MUD WITH FEW OIL SPECKS.

USED 2 PACKERS

Lease and Well No. PFANNENSTEIL D-1 1 18S 24W C SW NE

Formation Test No. 3

DATE SEPT 25, 1970

TICKET NO. 10756

	TIME	PSI
INITIAL HYDRO MUD PRESSURE		2370
INITIAL CLOSED IN PRESSURE	30 mins.	1285
INITIAL FLOW	30 mins.	80 to 86
FINAL FLOW	45 mins.	110 to 119
FINAL CLOSED IN PRESSURE	45 mins.	1211
FINAL HYDRO MUD PRESSURE		2333

TOTAL DEPTH 4300

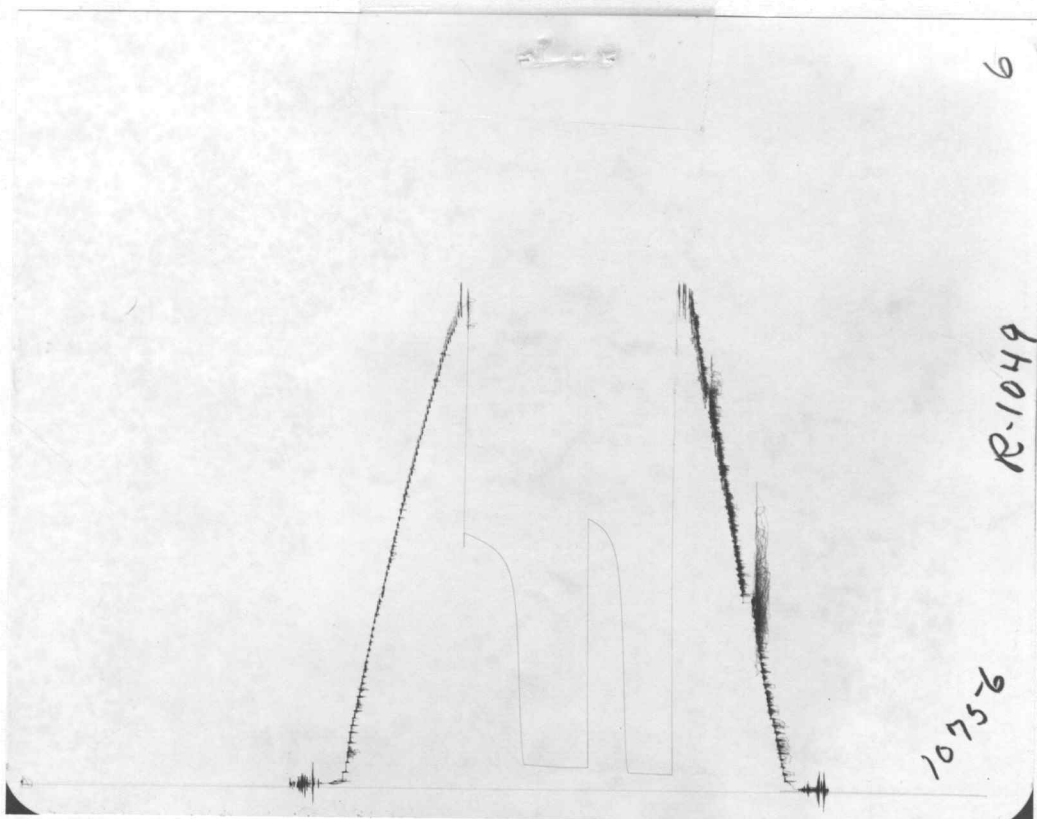
PACKER DEPTH 4224 and 4230

BT. NO. 1049 DEPTH 4295

1ST FLOW PRESSURE			INITIAL CIP		2ND FLOW PRESSURE		FINAL CIP	
		80		86		110		119
		80		778		110		732
		80		1116		115		1007
		82		1208		119		1089
		82		1241				1122
		86		1263				1149
		86		1285				1168
								1186
								1201
								1211
	5	MINUTE INTERVAL	5	MINUTE INTERVAL	15	MINUTE INTERVAL	5	MINUTE INTERVAL

REMARKS

SPECIAL PRESSURE DATA



Tool Open: 1st Flow hr. 30 mins: Shut-in Initial hr. 30 min: 2nd Flow hr. 45 min: Shut-in Final hr. 45 min.

	Field Reading	Corrected Reading
(A) Initial Hydrostatic Pressure	<u>2305</u>	<u>2370</u>
(B) Initial 1st Flow Pressure	<u>73</u>	<u>80</u>
(C) Final 1st Flow Pressure	<u>82</u>	<u>86</u>
(D) Initial Shut-in Pressure	<u>1281</u>	<u>1285</u>
(E) Initial 2nd Flow Pressure	<u>98</u>	<u>110</u>
(F) Final 2nd Flow Pressure	<u>119</u>	<u>119</u>
(G) Final Shut-in Pressure	<u>1207</u>	<u>1211</u>
(H) Final Hydrostatic Pressure	<u>2287</u>	<u>2333</u>

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Lease and Well No. PFANNENSTEIL D-1

County NESS State KANSAS Date SEPT 26, 1970

Formation Test No. 4 Total Depth 4356 Elev. _____

Interval Tested 4284 To 4356 Anchor Length 72'

Size Hole 7 7/8 Size Drill Pipe 4 1/2 FH Size Packer 6 3/4

Mud Weight 9.7 Viscosity 38 Water Loss 6 c.c. Bottom Hole Temp. 111 °F

Chokes: Top 1/2 Bottom 1/2 Ticket No. 10757

Length of Drill Collar _____ I. D. _____ Length Flexweight 810 I. D. 2.76

RECOVERY

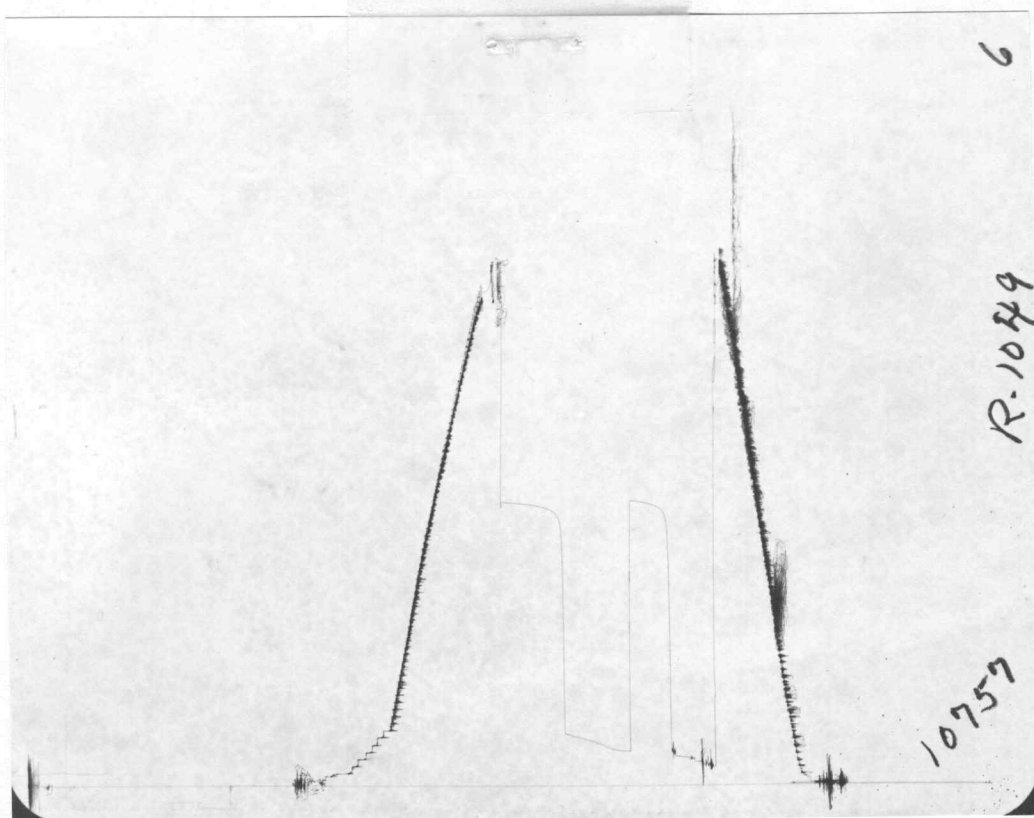
FAIR BLOW THROUGHOUT TEST.

60 FEET OF OIL.
180 FEET OF HEAVILY OIL CUT MUD.
180 FEET OF OIL CUT MUD.

USED 2 PACKERS

Lease and Well No. PFANNENSTEIL D-1 1 18S 24W C SW NE

Formation Test No. 4



Tool Open: 1st Flow hr. 30 mins: Shut-in Initial hr. 30 min: 2nd Flow hr. 45 min: Shut-in Final hr. 45 min.

	Field Reading	Corrected Reading
(A) Initial Hydrostatic Pressure	<u>2470</u>	<u>2397</u>
(B) Initial 1st Flow Pressure	<u>82</u>	<u>88</u>
(C) Final 1st Flow Pressure	<u>146</u>	<u>141</u>
(D) Initial Shut-in Pressure	<u>1335</u>	<u>1341</u>
(E) Initial 2nd Flow Pressure	<u>164</u>	<u>165</u>
(F) Final 2nd Flow Pressure	<u>237</u>	<u>247</u>
(G) Final Shut-in Pressure	<u>1335</u>	<u>1336</u>
(H) Final Hydrostatic Pressure	<u>2452</u>	<u>2388</u>

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Lease and Well No. PFANNENSTEIL D-1

County NESS State KANSAS Date SEPT 27, 1970

Formation Test No. 5 Total Depth 4364 Elev. _____

Interval Tested 4358 To 4364 Anchor Length 6'

Size Hole 7 7/8 Size Drill Pipe 4 1/2 FH Size Packer 6 3/4

Mud Weight 9.7 Viscosity 38 Water Loss 6 c.c. Bottom Hole Temp. 112 °F

Chokes: Top 1/2 Bottom 1/2 Ticket No. 10758

Length of Drill Collar _____ I. D. _____ Length Flexweight 810 I. D. 2.76

RECOVERY

WEAK AND STEADY BLOW THROUGHOUT TEST.

120 FEET OF GAS IN DRILL PIPE.

100 FEET OF CLEAR OIL.

60 FEET OF HEAVILY OIL CUT MUD.

USED 2 PACKERS

Lease and Well No. PFANNENSTEIL D-1 1 18S 24W C SW NE

Formation Test No. 5

DATE SEPT 27, 1970

LEASE PFANNENSTEIL WELL NO.

D-1

TEST NO. 5

TICKET NO. 10758

	TIME	PSI
INITIAL HYDRO MUD PRESSURE		2397
INITIAL CLOSED IN PRESSURE	30 mins.	1341
INITIAL FLOW	30 mins.	22 to 29
FINAL FLOW	45 mins.	57 to 64
FINAL CLOSED IN PRESSURE	45 mins.	1341
FINAL HYDRO MUD PRESSURE		2388

TOTAL DEPTH 4364

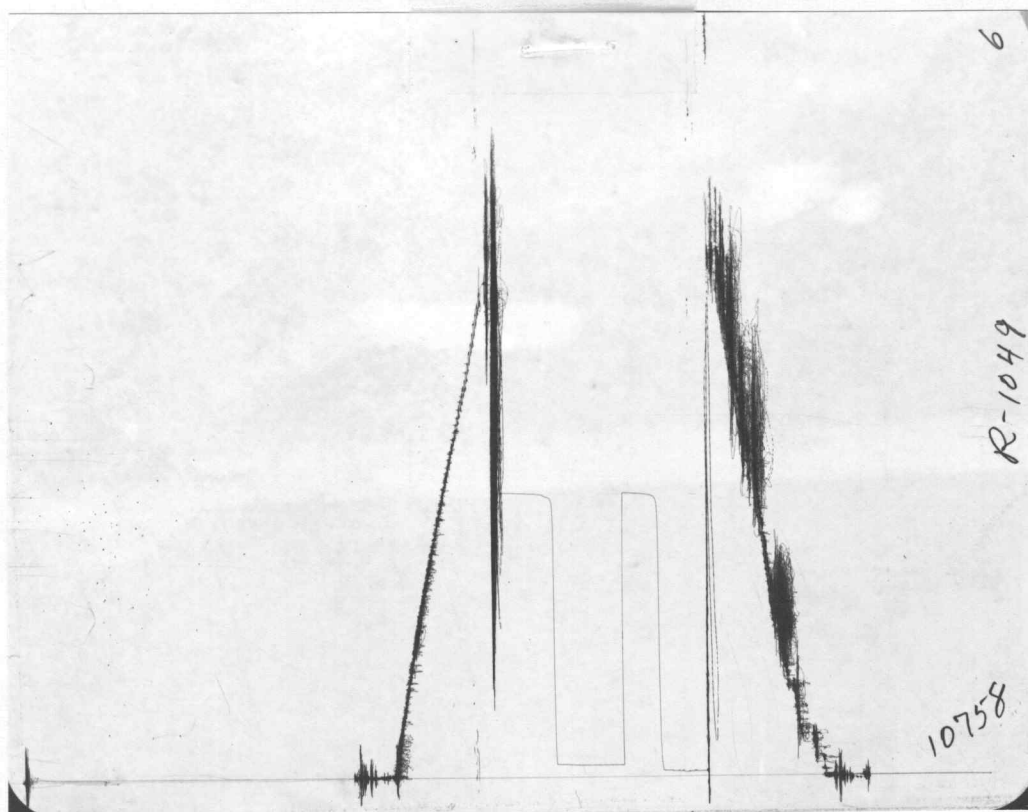
PACKER DEPTH 4352 and 4358

BT. NO. 1049 DEPTH 4350

1ST FLOW PRESSURE		$t = 30$ INITIAL CIP		2ND FLOW PRESSURE		$t = 45$ FINAL CIP				
$\frac{t}{\theta}$		$\frac{\theta}{t+\theta}$	$\frac{t+\theta}{\infty}$			$\frac{\theta}{t+\theta}$	$\frac{t+\theta}{45}$	$\frac{t+\theta}{\infty}$		
0	0	22	0	30	29	0	57	0	45	64
5	5	22	5	35	1323	15	59	5	50	1319
10	10	22	10	40	1330	30	61	10	55	1332
15	15	22	15	45	1334	45	64	15	60	1336
20	20	25	20	50	1338			20	65	1338
25	25	28	25	55	1340			25	70	1340
$t = 30$	30	29	30	60	1341			30	75	1340
								35	80	1341
								40	85	1341
								45	90	1341
	5	MINUTE INTERVAL	5	MINUTE INTERVAL	15	MINUTE INTERVAL	5	MINUTE INTERVAL		

REMARKS

SPECIAL PRESSURE DATA



Tool Open: 1st Flow hr. 30 mins: Shut-in Initial hr. 30 min: 2nd Flow hr. 45 min: Shut-in Final hr. 45 min.

	Field Reading	Corrected Reading
(A) Initial Hydrostatic Pressure	<u>2333</u>	<u>2397</u>
(B) Initial 1st Flow Pressure	<u>27</u>	<u>22</u>
(C) Final 1st Flow Pressure	<u>36</u>	<u>29</u>
(D) Initial Shut-in Pressure	<u>1339</u>	<u>1341</u>
(E) Initial 2nd Flow Pressure	<u>54</u>	<u>57</u>
(F) Final 2nd Flow Pressure	<u>67</u>	<u>64</u>
(G) Final Shut-in Pressure	<u>1339</u>	<u>1341</u>
(H) Final Hydrostatic Pressure	<u>2324</u>	<u>2388</u>

10758