



WESTERN TESTING CO., INC.

FORMATION TESTING

TICKET

No 18749

P. O. BOX 1599 WICHITA, KANSAS 67201 PHONE (316) 262-5861

Elevation 2880 GR Formation Oread, LKC 'A' Eff. Pay Ft.

District Colby Date 7-10-93 Customer Order No.

COMPANY NAME Thunderbird Drilling Inc.

ADDRESS PO Box 780407 Wichita KS. 67278

LEASE AND WELL NO. Dehman B-1 COUNTY Rawlins STATE KS. Sec. 25 Twp. 1 Rge. 32 W

Mail Invoice To WAHRMAN Same Co. Name Address No. Copies Requested Reg

Mail Charts To #B-1 Same Address No. Copies Requested Reg

Formation Test No. 1 Interval Tested From 3748 ft. to 3850 ft. Total Depth 3850 ft.

Packer Depth 3743 ft. Size 6.34 in. Packer Depth - ft. Size - in.

Packer Depth 3748 ft. Size 6.34 in. Packer Depth - ft. Size - in.

Depth of Selective Zone Set -

Top Recorder Depth (Inside) 3751 ft. Recorder Number 13760 Cap. 4000 3950

Bottom Recorder Depth (Outside) 3754 ft. Recorder Number 13400 Cap. 3950

Below Straddle Recorder Depth - ft. Recorder Number - Cap. -

Drilling Contractor Abercrombie Rig #4 Drill Collar Length - I. D. - in.

Mud Type Chemical Viscosity 48 Weight Pipe Length 570 I. D. 3.2 in.

Weight 9.1 Water Loss 12.8 cc. Drill Pipe Length 3158 I. D. 3.8 in.

Chlorides 1.000 P.P.M. Test Tool Length 20 ft. Tool Size 5/8" in.

Jars: Make No Serial Number 7 Anchor Length 102 ft. Size 5/8" in.

Did Well Flow? No Reversed Out No Surface Choke Size 3/4 in. Bottom Choke Size 3/4 in.

Main Hole Size 7/8 in. Tool Joint Size 4/2 XH in.

Blow: IEP- Weak Blow- 1/2" in water FFP- Weak Blow- 1/4" in water

Recovered 90 ft. of mud

Recovered ft. of

Recovered ft. of

Recovered ft. of

Recovered ft. of

Chlorides P.P.M. Sample Jars used Remarks: Both flows show plugging action

JUL 16 1993

Time On Location 9:00 A.M. P.M. Time Pick Up Tool 10:15 A.M. P.M. Time Off Location 4:50 A.M. P.M.

Time Set Packer(s) 12:20 A.M. P.M. Time Started Off Bottom 2:20 A.M. P.M. Maximum Temperature 110

Initial Hydrostatic Pressure (A) 1868 P.S.I.

Initial Flow Period Minutes 30 (B) 39 P.S.I. to (C) 68 P.S.I.

Initial Closed In Period Minutes 30 (D) 1210 P.S.I.

Final Flow Period Minutes 30 (E) 68 P.S.I. to (F) 78 P.S.I.

Final Closed In Period Minutes 30 (G) 1190 P.S.I.

Final Hydrostatic Pressure (H) 1839 P.S.I.

COMPANY TERMS

Western Testing Co., Inc. shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained directly or indirectly through the use of its equipment, of its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid at cost by the party for whom the test is made.

All charges subject to 12% interest after 60 days from date of invoice. Any expense incurred for collection will be added to the original amount.

Test Approved By Todd Colby Signature of Customer or his authorized representative

Western Representative Mike Skurunt

Thanks!

FIELD INVOICE

Table with 2 columns: Item (Open Hole Test, Misrun, Straddle Test, Jars, Selective Zone, Safety Joint, Standby, Evaluation, Extra Packer, Circ. Sub., Mileage, Fluid Sampler, Extra Charts, Insurance, Telecopier, TOTAL) and Amount (\$).

WESTERN TESTING CO., INC.

Pressure Data

Date 7-10-82 Test Ticket No. 18749  
 Recorder No. 122600 Capacity \_\_\_\_\_ Location \_\_\_\_\_ Ft.  
 Clock No. \_\_\_\_\_ Elevation \_\_\_\_\_ Well Temperature \_\_\_\_\_ °F

Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	<u>1926</u>	P.S.I.		M
B First Initial Flow Pressure	<u>29</u>	P.S.I.		Mins <u>50</u> Mins
C First Final Flow Pressure	<u>28</u>	P.S.I.		Mins <u>24</u> Mins
D Initial Closed-in Pressure	<u>1214</u>	P.S.I.		Mins <u>30</u> Mins
E Second Initial Flow Pressure	<u>23</u>	P.S.I.		Mins <u>24</u> Mins
F Second Final Flow Pressure	<u>97</u>	P.S.I.		
G Final Closed-in Pressure	<u>1185</u>	P.S.I.		
H Final Hydrostatic Mud	<u>1852</u>	P.S.I.		

*P. Duggan JFP - FFP*

PRESSURE BREAKDOWN

First Flow Pressure  
 Breakdown: \_\_\_\_\_ Inc.  
 of 5 mins. and a  
 final inc. of 0 Min.

Initial Shut-In  
 Breakdown: \_\_\_\_\_ Inc.  
 of 3 mins. and a  
 final inc. of 0 Min.

Second Flow Pressure  
 Breakdown: \_\_\_\_\_ Inc.  
 of 5 mins. and a  
 final inc. of 0 Min.

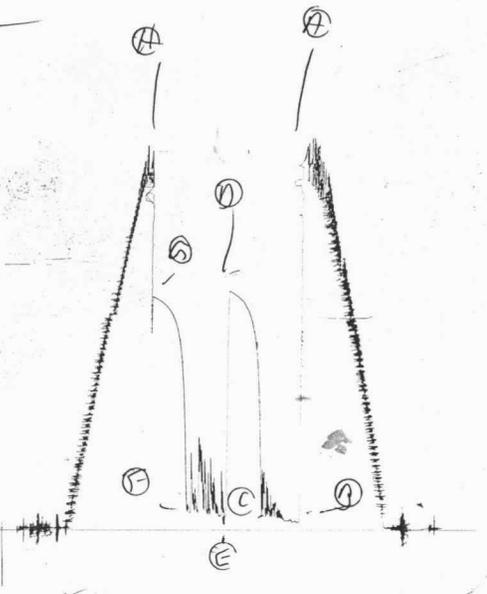
Final Shut-In  
 Breakdown: \_\_\_\_\_ Inc.  
 of 3 mins. and a  
 final inc. of 0 Min.

Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 0	<u>29</u>	0	<u>28</u>	0	<u>23</u>	0	<u>97</u>
P 2 5	<u>40</u>	3	<u>884</u>	5	<u>24</u>	3	<u>999</u>
P 3 10	<u>48</u>	6	<u>1052</u>	10	<u>334</u>	6	<u>1207</u>
P 4 15	<u>83</u>	9	<u>1015</u>	15	<u>114</u>	9	<u>1080</u>
P 5 20	<u>131</u>	12	<u>1152</u>	20	<u>299</u>	12	<u>1119</u>
P 6 25	<u>108</u>	15	<u>1122</u>	25	<u>185</u>	15	<u>1142</u>
P 7 30	<u>78</u>	18	<u>1192</u>	30	<u>97</u>	18	<u>1158</u>
P 8 35		21	<u>1206</u>	35		21	<u>1122</u>
P 9 40		24	<u>1214</u>	40		24	<u>1185</u>
P10 45		27		45		27	
P11 50		30		50		30	
P12 55		33		55		33	
P13 60		36		60		36	
P14 65		39		65		39	
P15 70		42		70		42	
P16 75		45		75		45	
P17 80		48		80		48	
P18 85		51		85		51	
P19 90		54		90		54	
P20 95		57		95		57	
100		60		100		60	

1342

KT 18749

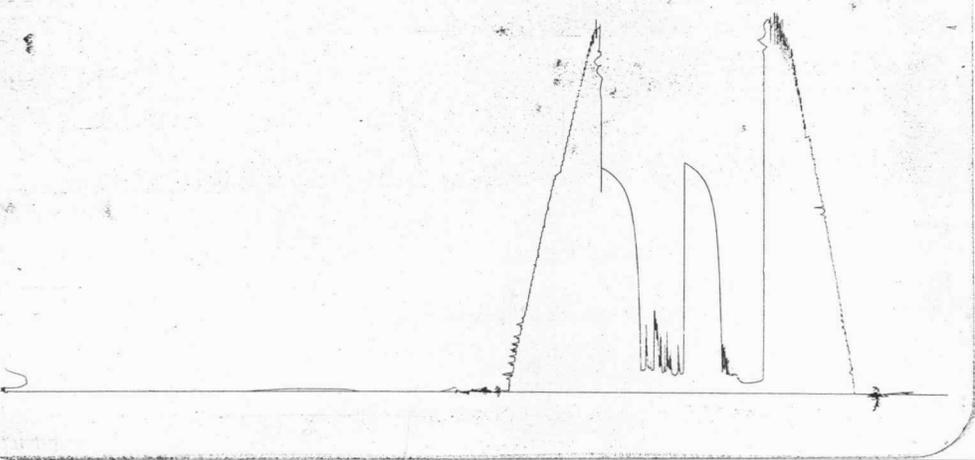
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1342

KT 18749

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# FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone 1 - 800-688-7021

DST REPORT

GENERAL INFORMATION

DATE : 7/10/93	TICKET : 18749
CUSTOMER : THUNDERBIRD DRILLING INC	LEASE : WAHRMAN
WELL : #B-1 TEST: 1	GEOLOGIST: AIKINS
ELEVATION: 2880 GR	FORMATION: OREAD, LKC - A
SECTION : 25	TOWNSHIP : 1S
RANGE : 32W COUNTY: RAWLINS	STATE : KS
GAUGE SN#: 13760 RANGE : 3950	CLOCK : 12

WELL INFORMATION

PERFORATION INTERVAL FROM: 3748.00 ft	TO: 3850.00 ft	TVD: 3850.0 ft
DEPTH OF SELECTIVE ZONE:		TEST TYPE: OIL
DEPTH OF RECORDERS: 3751.0 ft	3754.0 ft	
TEMPERATURE: 116.0		

DRILL COLLAR LENGTH: 0.0 ft	I.D.:	0.000 in
WEIGHT PIPE LENGTH : 570.0 ft	I.D.:	3.200 in
DRILL PIPE LENGTH : 3158.0 ft	I.D.:	3.800 in
TEST TOOL LENGTH : 20.0 ft	TOOL SIZE :	5.500 in
ANCHOR LENGTH : 102.0 ft	ANCHOR SIZE:	5.500 in
SURFACE CHOKE SIZE : 0.750 in	BOTTOM CHOKE SIZE:	0.750 in
MAIN HOLE SIZE : 7.875 in	TOOL JOINT SIZE :	4.5XH
PACKER DEPTH: 3743.0 ft	SIZE:	6.750 in
PACKER DEPTH: 3748.0 ft	SIZE:	6.750 in
PACKER DEPTH: 0.0 ft	SIZE:	0.000 in
PACKER DEPTH: 0.0 ft	SIZE:	0.000 in

MUD INFORMATION

DRILLING CON. : ABERCROMBIE RIG 4	
MUD TYPE : CHEMICAL	VISCOSITY : 48.00 cp
WEIGHT : 9.100 ppg	WATER LOSS: 12.800 cc
CHLORIDES : 1000 ppm	
JARS-MAKE :	SERIAL NUMBER:
DID WELL FLOW?: NO	REVERSED OUT?: NO

COMMENTS

Comment

INITIAL FLOW PERIOD WEAK BLOW - 1/2 INCH IN WATER.  
 FINAL FLOW PERIOD WEAK BLOW - 1/4 INCH IN WATER.  
 PLUGGING ACTION ON BOTH FLOW PERIODS.

DST REPORT (CONTINUED)

FLUID RECOVERY

Feet of Fluid	% Oil	% Gas	% Water	% Mud	Comments
90.0	0.0	0.0	0.0	100.0	MUD

RATE INFORMATION

OIL VOLUME:	0.0000	STB	TOTAL FLOW TIME:	60.0000	min.
GAS VOLUME:	0.0000	SCF	AVERAGE OIL RATE:	0.0000	STB/D
MUD VOLUME:	0.8952	STB	AVERAGE WATER RATE:	0.0000	STB/D
WATER VOLUME:	0.0000	STB			
TOTAL FLUID :	0.8952	STB			

FIELD TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 1868.00

Description	Duration	p1	p End
INITIAL FLOW	30.00	39.00	68.00
INITIAL SHUT-IN	30.00		1210.00
FINAL FLOW	30.00	68.00	78.00
FINAL SHUT-IN	30.00		1190.00

FINAL HYDROSTATIC PRESSURE: 1839.00

OFFICE TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 1926.00

Description	Duration	p1	p End
INITIAL FLOW	30.00	39.00	78.00
INITIAL SHUT-IN	24.00		1214.00
FINAL FLOW	30.00	73.00	97.00
FINAL SHUT-IN	24.00		1185.00

FINAL HYDROSTATIC PRESSURE: 1852.00

PRESSURE TRANSIENT REPORT

GENERAL INFORMATION

DATE	: 7/10/93	TICKET	: 18749
CUSTOMER	: THUNDERBIRD DRILLING INC	LEASE	: WAHRMAN
WELL	: #B-1	TEST:	1
ELEVATION:	2880 GR	GEOLOGIST:	AIKINS
SECTION	: 25	FORMATION:	OREAD, LKC - A
RANGE	: 32W	TOWNSHIP	: 1S
GAUGE SN#:	13760	STATE	: KS
		CLOCK	: 12
		COUNTY:	RAWLINS
		RANGE	: 3950

INITIAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	39.00	39.00
5.00	40.00	1.00
10.00	48.00	8.00
15.00	83.00	35.00
20.00	131.00	48.00
25.00	208.00	77.00
30.00	78.00	-130.00

INITIAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	884.00	884.00	0.00
6.00	1053.00	169.00	0.00
9.00	1113.00	60.00	0.00
12.00	1153.00	40.00	0.00
15.00	1173.00	20.00	0.00
18.00	1192.00	19.00	0.00
21.00	1206.00	14.00	0.00
24.00	1214.00	8.00	0.00

FINAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	73.00	73.00
5.00	74.00	1.00
10.00	234.00	160.00

PRESSURE TRANSIENT REPORT (CONTINUED)

FINAL FLOW (CONTINUED)

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
15.00	116.00	-118.00
20.00	399.00	283.00
25.00	185.00	-214.00
30.00	97.00	-88.00

FINAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	779.00	779.00	0.00
6.00	1007.00	228.00	0.00
9.00	1080.00	73.00	0.00
12.00	1119.00	39.00	0.00
15.00	1143.00	24.00	0.00
18.00	1158.00	15.00	0.00
21.00	1173.00	15.00	0.00
24.00	1185.00	12.00	0.00



WESTERN TESTING CO., INC.
FORMATION TESTING

TICKET No 18750

P. O. BOX 1599 PHONE (316) 262-5861
WICHITA, KANSAS 67201

Elevation 2880 GR Formation LKC Eff. Pay Ft.

District Colby Date 7-10-93 Customer Order No.

COMPANY NAME Thunderbird Drilling Inc

ADDRESS PO Box 780407 Wichita KS 67278

LEASE AND WELL NO. Wahman B-1 COUNTY Pawnee STATE KS Sec 25 Twp. 1 Rge. 32

Mail Invoice To Same No. Copies Requested Reg

Mail Charts To Wahman # Same Address No. Copies Requested Reg

Formation Test No. 2 Interval Tested From 3844 ft. to 3910 ft. Total Depth 3910 ft.
Packer Depth 3839 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Packer Depth 3844 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Depth of Selective Zone Set -

Top Recorder Depth (Inside) 5847 ft. Recorder Number 13760 Cap. 3950
Bottom Recorder Depth (Outside) 3850 ft. Recorder Number 13400 Cap. 3950
Below Straddle Recorder Depth - ft. Recorder Number - Cap. -

Drilling Contractor Abercrombie Rig #4 Drill Collar Length - I. D. - in.
Mud Type Chemical Viscosity 48 Weight Pipe Length 633 I. D. 3.2 in.
Weight 9.1 Water Loss 12.8 cc. Drill Pipe Length 3191 I. D. 3.8 in.
Chlorides 1000 P.P.M. Test Tool Length 20 ft. Tool Size 5 1/2 OD in.
Jars: Make Ne Serial Number - Anchor Length 66 ft. Size 5 1/2 OD in.
Did Well Flow? No Reversed Out No 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 KH in.

Blow: 1FP - Weak blow - 1/2" in water
FFP - Weak surface blow

Recovered 20 ft. of ocm 1090 oil 90 lb mud
Recovered ft. of

JUL 16 1993

Chlorides P.P.M. Sample Jars used Remarks:

Time On Location 10:00 A.M. Time Pick Up Tool 11:00 A.M. Time Off Location 6:00 A.M.

Time Set Packer(s) 1:00 P.M. Time Started Off Bottom 3:00 P.M. Maximum Temperature 117

Initial Hydrostatic Pressure (A) 1927 P.S.I.
Initial Flow Period Minutes 30 (B) 29 P.S.I. to (C) 29 P.S.I.
Initial Closed In Period Minutes 30 (D) 984 P.S.I.
Final Flow Period Minutes 30 (E) 39 P.S.I. to (F) 39 P.S.I.
Final Closed In Period Minutes 30 (G) 916 P.S.I.
Final Hydrostatic Pressure (H) 1907 P.S.I.

COMPANY TERMS

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Test Approved By Todd Catanzani Signature of Customer or his authorized representative

Western Representative Mike Shultz Thanks!

FIELD INVOICE

- Open Hole Test \$
Misrun \$
Straddle Test \$
Jars \$
Selective Zone \$
Safety Joint \$
Standby \$
Evaluation \$
Extra Packer \$
Circ. Sub. \$
Mileage \$
Fluid Sampler \$
Extra Charts \$
Insurance \$
Telecopier \$
TOTAL \$

WESTERN TESTING CO., INC.

Pressure Data

Date 11-10-52

Test Ticket No. 18250

Recorder No. 12760

Capacity \_\_\_\_\_ Location \_\_\_\_\_ Ft.

Clock No. \_\_\_\_\_ Elevation \_\_\_\_\_ Well Temperature \_\_\_\_\_ °F

Point	Pressure	Time Given	Time Computed
A Initial Hydrostatic Mud	<u>1917</u> P.S.I.		M
B First Initial Flow Pressure	<u>33</u> P.S.I.		Mins. <u>30</u> Mins.
C First Final Flow Pressure	<u>33</u> P.S.I.		Mins. <u>27</u> Mins.
D Initial Closed-in Pressure	<u>981</u> P.S.I.		Mins. <u>40</u> Mins.
E Second Initial Flow Pressure	<u>42</u> P.S.I.		Mins. <u>40</u> Mins.
F Second Final Flow Pressure	<u>42</u> P.S.I.		
G Final Closed-in Pressure	<u>919</u> P.S.I.		
H Final Hydrostatic Mud	<u>1899</u> P.S.I.		

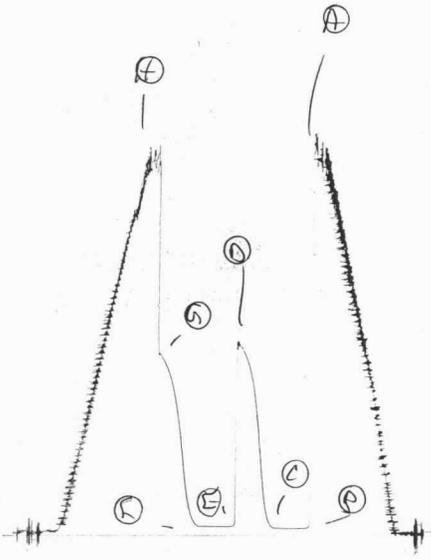
PRESSURE BREAKDOWN

Point Mins.	First Flow Pressure	Initial Shut-In	Second Flow Pressure	Final Shut-In			
	Breakdown: _____ Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.	Breakdown: _____ Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.	Breakdown: _____ Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.	Breakdown: _____ Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.			
	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 0	<u>33</u>	0	<u>33</u>	0	<u>42</u>	0	<u>42</u>
P 2 5	<u>33</u>	3	<u>69</u>	5	<u>42</u>	3	<u>71</u>
P 3 10	<u>33</u>	6	<u>101</u>	10	<u>42</u>	6	<u>108</u>
P 4 15	<u>33</u>	9	<u>142</u>	15	<u>42</u>	9	<u>152</u>
P 5 20	<u>33</u>	12	<u>185</u>	20	<u>42</u>	12	<u>207</u>
P 6 25	<u>33</u>	15	<u>232</u>	25	<u>42</u>	15	<u>262</u>
P 7 30	<u>33</u>	18	<u>282</u>	30	<u>42</u>	18	<u>316</u>
P 8 35	<u>33</u>	21	<u>332</u>	35	<u>42</u>	21	<u>372</u>
P 9 40	<u>33</u>	24	<u>382</u>	40	<u>42</u>	24	<u>425</u>
P10 45	<u>33</u>	27	<u>431</u>	45	<u>42</u>	27	<u>482</u>
P11 50	<u>33</u>	30	<u>481</u>	50	<u>42</u>	30	<u>539</u>
P12 55	<u>33</u>	33	<u>532</u>	55	<u>42</u>	33	<u>592</u>
P13 60	<u>33</u>	36	<u>582</u>	60	<u>42</u>	36	<u>642</u>
P14 65	<u>33</u>	39	<u>632</u>	65	<u>42</u>	39	<u>692</u>
P15 70	<u>33</u>	42	<u>682</u>	70	<u>42</u>	42	<u>742</u>
P16 75	<u>33</u>	45	<u>732</u>	75	<u>42</u>	45	<u>792</u>
P17 80	<u>33</u>	48	<u>782</u>	80	<u>42</u>	48	<u>842</u>
P18 85	<u>33</u>	51	<u>832</u>	85	<u>42</u>	51	<u>892</u>
P19 90	<u>33</u>	54	<u>882</u>	90	<u>42</u>	54	<u>942</u>
P20 95	<u>33</u>	57	<u>932</u>	95	<u>42</u>	57	<u>992</u>
100	<u>33</u>	60	<u>982</u>	100	<u>42</u>	60	<u>1042</u>

13260  
DST#2

JKT 18750

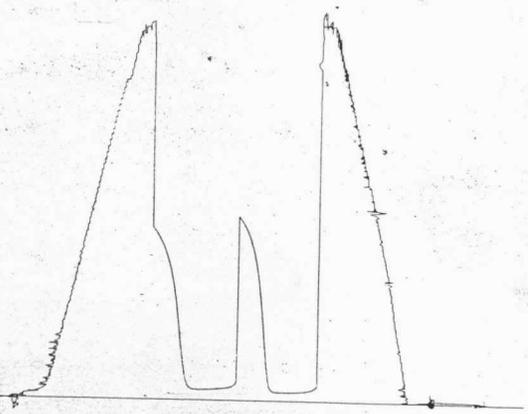
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13400  
DST#2

JKT 18750

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# FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone **1 - 800-688-7021**

DST REPORT

GENERAL INFORMATION

DATE : 7/10/93  
CUSTOMER : THUNDERBIRD DRILLING INC  
WELL : #B-1 TEST: 2  
ELEVATION: 2880 GR  
SECTION : 25  
RANGE : 32W COUNTY: RAWLINS  
GAUGE SN#: 13760 RANGE : 3950  
TICKET : 18750  
LEASE : WAHRMAN  
GEOLOGIST: AIKINS  
FORMATION: L. KANSAS CITY  
TOWNSHIP : 1S  
STATE : KS  
CLOCK : 12

WELL INFORMATION

PERFORATION INTERVAL FROM: 3844.00 ft TO: 3910.00 ft TVD: 3910.0 ft  
DEPTH OF SELECTIVE ZONE: TEST TYPE: OIL  
DEPTH OF RECORDERS: 3847.0 ft 3850.0 ft  
TEMPERATURE: 117.0  
DRILL COLLAR LENGTH: 0.0 ft I.D.: 0.000 in  
WEIGHT PIPE LENGTH : 633.0 ft I.D.: 3.200 in  
DRILL PIPE LENGTH : 3191.0 ft I.D.: 3.800 in  
TEST TOOL LENGTH : 20.0 ft TOOL SIZE : 5.500 in  
ANCHOR LENGTH : 66.0 ft ANCHOR SIZE: 5.500 in  
SURFACE CHOKE SIZE : 0.750 in BOTTOM CHOKE SIZE: 0.750 in  
MAIN HOLE SIZE : 7.875 in TOOL JOINT SIZE : 4.5XH  
PACKER DEPTH: 3839.0 ft SIZE: 6.750 in  
PACKER DEPTH: 3844.0 ft SIZE: 6.750 in  
PACKER DEPTH: 0.0 ft SIZE: 0.000 in  
PACKER DEPTH: 0.0 ft SIZE: 0.000 in

MUD INFORMATION

DRILLING CON. : ABERCROMBIE RIG 4  
MUD TYPE : CHEMICAL VISCOSITY : 48.00 cp  
WEIGHT : 9.100 ppg WATER LOSS: 12.800 cc  
CHLORIDES : 1000 ppm  
JARS-MAKE :  
DID WELL FLOW?: NO SERIAL NUMBER:  
REVERSED OUT?: NO

COMMENTS

Comment

INITIAL FLOW PERIOD WEAK BLOW - 1/2 INCH IN WATER.  
FINAL FLOW PERIOD WEAK SURFACE BLOW.

DST REPORT (CONTINUED)

FLUID RECOVERY

Feet of Fluid	% Oil	% Gas	% Water	% Mud	Comments
20.0	10.0	0.0	0.0	90.0	OIL CUT MUD

RATE INFORMATION

OIL VOLUME:	0.0199 STB	TOTAL FLOW TIME:	60.0000 min.
GAS VOLUME:	0.0000 SCF	AVERAGE OIL RATE:	4.7744 STB/D
MUD VOLUME:	0.1790 STB	AVERAGE WATER RATE:	0.0000 STB/D
WATER VOLUME:	0.0000 STB		
TOTAL FLUID :	0.1989 STB		

FIELD TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 1927.00

Description	Duration	p1	p End
INITIAL FLOW	30.00	29.00	29.00
INITIAL SHUT-IN	30.00		984.00
FINAL FLOW	30.00	39.00	39.00
FINAL SHUT-IN	30.00		916.00

FINAL HYDROSTATIC PRESSURE: 1907.00

OFFICE TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 1917.00

Description	Duration	p1	p End
INITIAL FLOW	30.00	33.00	33.00
INITIAL SHUT-IN	27.00		981.00
FINAL FLOW	30.00	42.00	42.00
FINAL SHUT-IN	30.00		919.00

FINAL HYDROSTATIC PRESSURE: 1899.00

PRESSURE TRANSIENT REPORT

GENERAL INFORMATION

DATE : 7/10/93	TICKET : 18750
CUSTOMER : THUNDERBIRD DRILLING INC	LEASE : WAHRMAN
WELL : #B-1 TEST: 2	GEOLOGIST: AIKINS
ELEVATION: 2880 GR	FORMATION: L. KANSAS CITY
SECTION : 25	TOWNSHIP : 1S
RANGE : 32W COUNTY: RAWLINS	STATE : KS
GAUGE SN#: 13760 RANGE : 3950	CLOCK : 12

INITIAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	33.00	33.00
5.00	33.00	0.00
10.00	33.00	0.00
15.00	33.00	0.00
20.00	33.00	0.00
25.00	33.00	0.00
30.00	33.00	0.00

INITIAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	69.00	69.00	0.00
6.00	171.00	102.00	0.00
9.00	403.00	232.00	0.00
12.00	625.00	222.00	0.00
15.00	772.00	147.00	0.00
18.00	862.00	90.00	0.00
21.00	913.00	51.00	0.00
24.00	953.00	40.00	0.00
27.00	981.00	28.00	0.00

FINAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	42.00	42.00
5.00	42.00	0.00

PRESSURE TRANSIENT REPORT (CONTINUED)

FINAL FLOW (CONTINUED)

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
10.00	42.00	0.00
15.00	42.00	0.00
20.00	42.00	0.00
25.00	42.00	0.00
30.00	42.00	0.00

FINAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	71.00	71.00	0.00
6.00	138.00	67.00	0.00
9.00	273.00	135.00	0.00
12.00	477.00	204.00	0.00
15.00	642.00	165.00	0.00
18.00	756.00	114.00	0.00
21.00	832.00	76.00	0.00
24.00	875.00	43.00	0.00
27.00	912.00	37.00	0.00
30.00	919.00	7.00	0.00



WESTERN TESTING CO., INC.  
FORMATION TESTING

TICKET NO 18502

P. O. BOX 1599 PHONE (316) 262-5861  
WICHITA, KANSAS 67201

Elevation 2880 GR Formation L KC "H" Eff. Pay Ft.

District Colby Date 7-12-93 Customer Order No.

COMPANY NAME Thunderbird Drilling, Inc

ADDRESS PO Box 780407 Wichita KS 67278

LEASE AND WELL NO. Wahren B#1 COUNTY Rawlins STATE KS. Sec. 25 Twp. 1 Rge. 32

Mail Invoice To Same Co. Name Address No. Copies Requested Reg

Mail Charts To # B-1 Wahren Address No. Copies Requested Reg

Formation Test No. 3 Interval Tested From 3935 ft. to 3995 ft. Total Depth 3995 ft.

Packer Depth 3930 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.

Packer Depth 3935 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.

Depth of Selective Zone Set -

Top Recorder Depth (Inside) 3938 ft. Recorder Number 13760 Cap. 3950

Bottom Recorder Depth (Outside) 3941 ft. Recorder Number 13400 Cap. 3950

Below Straddle Recorder Depth - ft. Recorder Number - Cap. -

Drilling Contractor Abercrombie Rig # 4 Drill Collar Length - I. D. - in.

Mud Type Chemical Viscosity 48 Weight Pipe Length 602 I. D. 3.2 in.

Weight 9.1 Water Loss 12.8 cc. Drill Pipe Length 3313 I. D. 3.8 in.

Chlorides 1.200 P.P.M. Test Tool Length 20 ft. Tool Size 5 1/2 OD in.

Jars: Make NO Serial Number - Anchor Length 60 ft. Size 5 1/2 OD in.

Did Well Flow? NO Reversed Out NO Surface Choke Size 3/4 in. Bottom Choke Size 3/4 in.

Main Hole Size 7/8 in. Tool Joint Size 4 1/2 x H in.

Blow: IFP - Strong Blow - 10" in water

FFP - Fair blow 6" in water

Recovered 60 ft. of mud w scum of oil on top - all less than 1%

Recovered 420 ft. of water

Recovered - ft. of

Recovered - ft. of

Recovered - ft. of

Chlorides 48.100 P.P.M. Sample Jars used - Remarks:

JUL 16 1993

Time On Location 1200 A.M. Time Pick Up Tool 130 P.M. Time Off Location 117 A.M.

Time Set Packer(s) 330 A.M. Time Started Off Bottom 645 P.M. Maximum Temperature

Initial Hydrostatic Pressure (A) 1986 P.S.I.

Initial Flow Period Minutes 30 (B) 68 P.S.I. to (C) 136 P.S.I.

Initial Closed In Period Minutes 60 (D) 1122 P.S.I.

Final Flow Period Minutes 45 (E) 146 P.S.I. to (F) 244 P.S.I.

Final Closed In Period Minutes 60 (G) 1043 P.S.I.

Final Hydrostatic Pressure (H) 1956 P.S.I.

COMPANY TERMS

Western Testing Co., Inc. shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained directly or indirectly through the use of its equipment, of its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid at cost by the party for whom the test is made.

All charges subject to 12% interest after 60 days from date of invoice. Any expense incurred for collection will be added to the original amount.

Test Approved By [Signature] Signature of Customer or his authorized representative

Western Representative Mike Shurt

Thanks!

FIELD INVOICE

- Open Hole Test \$
- Misrun \$
- Straddle Test \$
- Jars \$
- Selective Zone \$
- Safety Joint \$
- Standby \$
- Evaluation \$
- Extra Packer \$
- Circ. Sub. \$
- Mileage \$
- Fluid Sampler \$
- Extra Charts \$
- Insurance \$
- Telecopier \$
- TOTAL \$

**WESTERN TESTING CO., INC.**  
**Pressure Data**

Date 7-12-92 Test Ticket No. 18502  
 Recorder No. 15960 Capacity \_\_\_\_\_ Location \_\_\_\_\_ Ft.  
 Clock No. \_\_\_\_\_ Elevation \_\_\_\_\_ Well Temperature \_\_\_\_\_ °F

Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	<u>204</u> P.S.I.	Open Tool	_____ M	_____
B First Initial Flow Pressure	<u>50</u> P.S.I.	First Flow Pressure	_____ Mins.	<u>20</u> Mins.
C First Final Flow Pressure	<u>118</u> P.S.I.	Initial Closed-in Pressure	_____ Mins.	<u>57</u> Mins.
D Initial Closed-in Pressure	<u>147</u> P.S.I.	Second Flow Pressure	_____ Mins.	<u>45</u> Mins.
E Second Initial Flow Pressure	<u>242</u> P.S.I.	Final Closed-in Pressure	_____ Mins.	<u>66</u> Mins.
F Second Final Flow Pressure	<u>1040</u> P.S.I.			
G Final Closed-in Pressure	<u>1987</u> P.S.I.			
H Final Hydrostatic Mud				

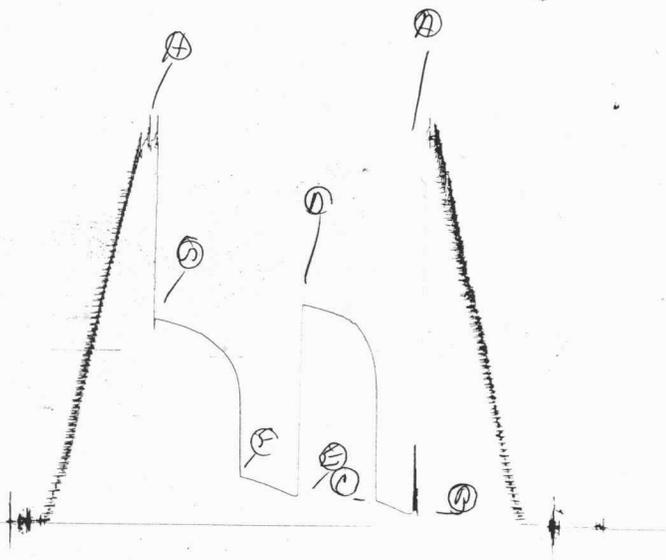
**PRESSURE BREAKDOWN**

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: _____ Inc.		Breakdown: _____ Inc.		Breakdown: _____ Inc.		Breakdown: _____ Inc.	
of <u>5</u> mins. and a		of <u>3</u> mins. and a		of <u>5</u> mins. and a		of <u>3</u> mins. and a	
final inc. of <u>0</u> Min.		final inc. of <u>0</u> Min.		final inc. of <u>0</u> Min.		final inc. of <u>0</u> Min.	
Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 0	<u>50</u>	0	<u>147</u>	0	<u>147</u>	0	<u>242</u>
P 2 5	<u>62</u>	3	<u>285</u>	5	<u>151</u>	3	<u>216</u>
P 3 10	<u>64</u>	6	<u>878</u>	10	<u>166</u>	6	<u>285</u>
P 4 15	<u>80</u>	9	<u>928</u>	15	<u>180</u>	9	<u>824</u>
P 5 20	<u>97</u>	12	<u>964</u>	20	<u>194</u>	12	<u>852</u>
P 6 25	<u>109</u>	15	<u>994</u>	25	<u>206</u>	15	<u>876</u>
P 7 30	<u>122</u>	18	<u>1022</u>	30	<u>218</u>	18	<u>896</u>
P 8 35		21	<u>1032</u>	35	<u>229</u>	21	<u>912</u>
P 9 40		24	<u>1044</u>	40	<u>237</u>	24	<u>931</u>
P10 45		27	<u>1055</u>	45	<u>242</u>	27	<u>945</u>
P11 50		30	<u>1062</u>	50		30	<u>960</u>
P12 55		33	<u>1072</u>	55		33	<u>970</u>
P13 60		36	<u>1080</u>	60		36	<u>981</u>
P14 65		39	<u>1085</u>	65		39	<u>988</u>
P15 70		42	<u>1092</u>	70		42	<u>994</u>
P16 75		45	<u>1096</u>	75		45	<u>1004</u>
P17 80		48	<u>1102</u>	80		48	<u>1011</u>
P18 85		51	<u>1108</u>	85		51	<u>1016</u>
P19 90		54	<u>1112</u>	90		54	<u>1022</u>
P20 95		57	<u>1118</u>	95		57	<u>1029</u>
100		60		100		60	<u>1032</u>
						63	<u>1037</u>
						66	<u>1040</u>

13760

KT 18502

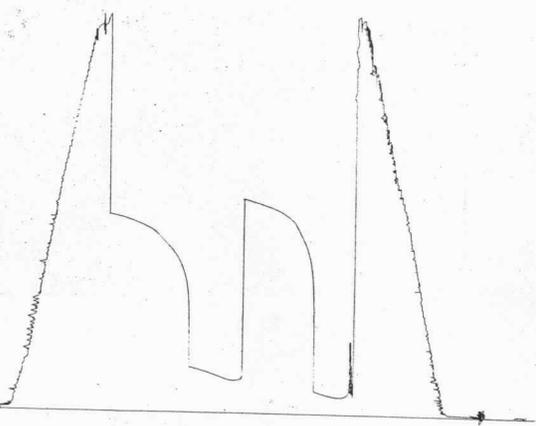
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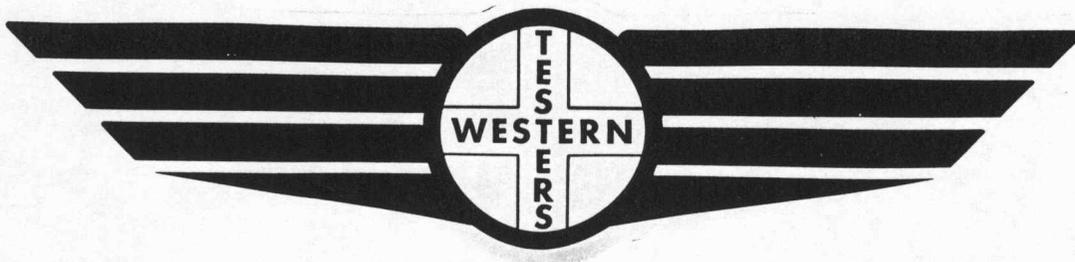
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KT 18502

II



# FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone **1 - 800-688-7021**

DST REPORT

GENERAL INFORMATION

DATE : 7/12/93	TICKET : 18502
CUSTOMER : THUNDERBIRD DRILLING INC	LEASE : WAHRMAN
WELL : #B-1 TEST: 3	GEOLOGIST: AIKINS
ELEVATION: 2880 GR	FORMATION: L KANSAS CITY H
SECTION : 25	TOWNSHIP : 1S
RANGE : 32W COUNTY: RAWLINS	STATE : KS
GAUGE SN#: 13760 RANGE : 3950	CLOCK : 12

WELL INFORMATION

PERFORATION INTERVAL FROM: 3935.00 ft	TO: 3995.00 ft	TVD: 3995.0 ft
DEPTH OF SELECTIVE ZONE:		TEST TYPE: OIL
DEPTH OF RECORDERS: 3938.0 ft	3941.0 ft	
TEMPERATURE: 117.0		

DRILL COLLAR LENGTH: 0.0 ft	I.D.:	0.000 in
WEIGHT PIPE LENGTH : 602.0 ft	I.D.:	3.200 in
DRILL PIPE LENGTH : 3313.0 ft	I.D.:	3.800 in
TEST TOOL LENGTH : 20.0 ft	TOOL SIZE :	5.500 in
ANCHOR LENGTH : 60.0 ft	ANCHOR SIZE:	5.500 in
SURFACE CHOKE SIZE : 0.750 in	BOTTOM CHOKE SIZE:	0.750 in
MAIN HOLE SIZE : 7.875 in	TOOL JOINT SIZE :	4.5XH
PACKER DEPTH: 3930.0 ft	SIZE:	6.750 in
PACKER DEPTH: 3935.0 ft	SIZE:	6.750 in
PACKER DEPTH: 0.0 ft	SIZE:	0.000 in
PACKER DEPTH: 0.0 ft	SIZE:	0.000 in

MUD INFORMATION

DRILLING CON. : ABERCROMBIE RIG 4	VISCOSITY : 48.00 cp
MUD TYPE : CHEMICAL	WATER LOSS: 12.800 cc
WEIGHT : 9.100 ppg	
CHLORIDES : 1200 ppm	SERIAL NUMBER:
JARS-MAKE :	REVERSED OUT?: NO
DID WELL FLOW?: NO	

COMMENTS

Comment

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INITIAL FLOW PERIOD STRONG BLOW - 10 INCHES IN WATER. FINAL FLOW PERIOD FAIR BLOW - 6 INCHES IN WATER.

DST REPORT (CONTINUED)

FLUID RECOVERY

Feet of Fluid	% Oil	% Gas	% Water	% Mud	Comments
60.0	0.0	0.0	0.0	100.0	MUD W/SCUM OF OIL ON TOP-
0.0	0.0	0.0	0.0	0.0	OIL LESS THAN 1%
420.0	0.0	0.0	100.0	0.0	WATER
0.0	0.0	0.0	0.0	0.0	CHLORIDES 48000 PPM

RATE INFORMATION

OIL VOLUME:	0.0000	STB	TOTAL FLOW TIME:	75.0000	min.
GAS VOLUME:	0.0000	SCF	AVERAGE OIL RATE:	0.0000	STB/D
MUD VOLUME:	0.5968	STB	AVERAGE WATER RATE:	80.2099	STB/D
WATER VOLUME:	4.1776	STB			
TOTAL FLUID :	4.7744	STB			

FIELD TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 1986.00

Description	Duration	p1	p End
INITIAL FLOW	30.00	68.00	136.00
INITIAL SHUT-IN	60.00		1122.00
FINAL FLOW	45.00	146.00	244.00
FINAL SHUT-IN	60.00		1043.00

FINAL HYDROSTATIC PRESSURE: 1956.00

OFFICE TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 2011.00

Description	Duration	p1	p End
INITIAL FLOW	30.00	50.00	123.00
INITIAL SHUT-IN	57.00		1118.00
FINAL FLOW	45.00	147.00	242.00
FINAL SHUT-IN	66.00		1040.00

FINAL HYDROSTATIC PRESSURE: 1987.00

PRESSURE TRANSIENT REPORT

GENERAL INFORMATION

DATE : 7/12/93	TICKET : 18502
CUSTOMER : THUNDERBIRD DRILLING INC	LEASE : WAHRMAN
WELL : #B-1                      TEST: 3	GEOLOGIST: AIKINS
ELEVATION: 2880 GR	FORMATION: L KANSAS CITY H
SECTION : 25	TOWNSHIP : 1S
RANGE : 32W                      COUNTY: RAWLINS	STATE : KS
GAUGE SN#: 13760                RANGE : 3950	CLOCK : 12

INITIAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	50.00	50.00
5.00	63.00	13.00
10.00	66.00	3.00
15.00	80.00	14.00
20.00	97.00	17.00
25.00	109.00	12.00
30.00	123.00	14.00

INITIAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	785.00	785.00	0.00
6.00	878.00	93.00	0.00
9.00	928.00	50.00	0.00
12.00	964.00	36.00	0.00
15.00	994.00	30.00	0.00
18.00	1022.00	28.00	0.00
21.00	1032.00	10.00	0.00
24.00	1044.00	12.00	0.00
27.00	1055.00	11.00	0.00
30.00	1063.00	8.00	0.00
33.00	1072.00	9.00	0.00
36.00	1080.00	8.00	0.00
39.00	1085.00	5.00	0.00
42.00	1092.00	7.00	0.00
45.00	1096.00	4.00	0.00
48.00	1103.00	7.00	0.00
51.00	1108.00	5.00	0.00
54.00	1112.00	4.00	0.00
57.00	1118.00	6.00	0.00

PRESSURE TRANSIENT REPORT (CONTINUED)

FINAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	147.00	147.00
5.00	151.00	4.00
10.00	166.00	15.00
15.00	180.00	14.00
20.00	194.00	14.00
25.00	206.00	12.00
30.00	218.00	12.00
35.00	229.00	11.00
40.00	237.00	8.00
45.00	242.00	5.00

FINAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	716.00	716.00	0.00
6.00	785.00	69.00	0.00
9.00	824.00	39.00	0.00
12.00	852.00	28.00	0.00
15.00	876.00	24.00	0.00
18.00	896.00	20.00	0.00
21.00	912.00	16.00	0.00
24.00	931.00	19.00	0.00
27.00	945.00	14.00	0.00
30.00	960.00	15.00	0.00
33.00	970.00	10.00	0.00
36.00	981.00	11.00	0.00
39.00	988.00	7.00	0.00
42.00	996.00	8.00	0.00
45.00	1004.00	8.00	0.00
48.00	1011.00	7.00	0.00
51.00	1016.00	5.00	0.00
54.00	1023.00	7.00	0.00
57.00	1029.00	6.00	0.00
60.00	1033.00	4.00	0.00
63.00	1037.00	4.00	0.00
66.00	1040.00	3.00	0.00



WESTERN TESTING CO., INC.

FORMATION TESTING

TICKET

1551  
No 18503

P. O. BOX 1599 PHONE (316) 262-5861  
WICHITA, KANSAS 67201

Elevation 2880 GR Formation L KC-5 Eff. Pay Ft.

District Colby Date 7-12-93 Customer Order No.

COMPANY NAME Thunderbird Drilling Inc

ADDRESS PO Box 780407 Wichita ks. 67278

LEASE AND WELL NO. Waheman B#1 COUNTY Rawlins STATE ks Sec. 25 Twp. 1 Rge. 32

Mail Invoice To Same No. Copies Requested Reg

Co. Name Waheman Address Same No. Copies Requested Reg

Formation Test No. 4 Interval Tested From 3986 ft. to 4030 ft. Total Depth 4030 ft.

Packer Depth 3981 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.

Packer Depth 3986 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.

Depth of Selective Zone Set -

Top Recorder Depth (Inside) 3989 ft. Recorder Number 13760 Cap. 3950

Bottom Recorder Depth (Outside) 3992 ft. Recorder Number 13400 Cap. 3950

Below Straddle Recorder Depth - ft. Recorder Number - Cap. -

Drilling Contractor Abercrombie Rig #4 Drill Collar Length - I. D. - in.

Mud Type Chemical Viscosity 44 Weight Pipe Length 633 I. D. 3.2 in.

Weight 9.4 Water Loss 12.0 cc. Drill Pipe Length 3333 I. D. 3.8 in.

Chlorides 1.200 P.P.M. Test Tool Length 20 ft. Tool Size 5 1/2 00 in.

Jars: Make ne Serial Number - Anchor Length 44 ft. Size 5 1/2 00 in.

Did Well Flow? ne Reversed Out ne Surface Choke Size 3/4 in. Bottom Choke Size 3/4 in.

Main Hole Size 7/8 in. Tool Joint Size 4 1/2 111 in.

Blow: 1FP- Strong Blow - Bottom of bucket in 15 min

FFP- Strong Blow - Bottom of bucket in 11 min

Recovered 339 ft. of oil 36 Gravity @ 60°

Recovered 120 ft. of mco 60 90 oil 40 90 mud

Recovered - ft. of -

Recovered - ft. of -

Recovered - ft. of -

Chlorides - P.P.M. Sample Jars used - Remarks: JUL 16 1993

Time On Location 2 40 A.M. Time Pick Up Tool 500 P.M. Time Off Location 11 00 A.M.

Time Set Packer(s) 4 20 A.M. Time Started Off Bottom 735 P.M. Maximum Temperature 118

Initial Hydrostatic Pressure (A) 1986 P.S.I.

Initial Flow Period Minutes 30 (B) 39 P.S.I. to (C) 97 P.S.I.

Initial Closed In Period Minutes 60 (D) 1338 P.S.I.

Final Flow Period Minutes 45 (E) 117 P.S.I. to (F) 205 P.S.I.

Final Closed In Period Minutes 60 (G) 1309 P.S.I.

Final Hydrostatic Pressure (H) 1926 P.S.I.

COMPANY TERMS

Western Testing Co., Inc. shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained directly or indirectly through the use of its equipment, of its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid at cost by the party for whom the test is made.

All charges subject to 12% interest after 60 days from date of invoice. Any expense incurred for collection will be added to the original amount.

Test Approved By Todd Liker  
Signature of Customer or his authorized representative

Western Representative Mike Schubert

Thanks!

FIELD INVOICE

Open Hole Test	\$
Misrun	\$
Straddle Test	\$
Jars	\$
Selective Zone	\$
Safety Joint	\$
Standby	\$
Evaluation	\$
Extra Packer	\$
Circ. Sub.	\$
Mileage	\$
Fluid Sampler	\$
Extra Charts	\$
Insurance	\$
Telecopier	\$
TOTAL	\$

**WESTERN TESTING CO., INC.**  
**Pressure Data**

Date 7-12-92

Test Ticket No. 18502

Recorder No. 12260

Capacity \_\_\_\_\_ Location \_\_\_\_\_ Ft.

Clock No. \_\_\_\_\_ Elevation \_\_\_\_\_ Well Temperature \_\_\_\_\_ °F

Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	<u>1994</u> P.S.I.	Open Tool		M _____
B First Initial Flow Pressure	<u>39</u> P.S.I.	First Flow Pressure	Mins. <u>30</u>	Mins. _____
C First Final Flow Pressure	<u>99</u> P.S.I.	Initial Closed-in Pressure	Mins. <u>40</u>	Mins. _____
D Initial Closed-in Pressure	<u>1341</u> P.S.I.	Second Flow Pressure	Mins. <u>45</u>	Mins. _____
E Second Initial Flow Pressure	<u>122</u> P.S.I.	Final Closed-in Pressure	Mins. <u>60</u>	Mins. _____
F Second Final Flow Pressure	<u>200</u> P.S.I.			
G Final Closed-in Pressure	<u>1322</u> P.S.I.			
H Final Hydrostatic Mud	<u>1957</u> P.S.I.			

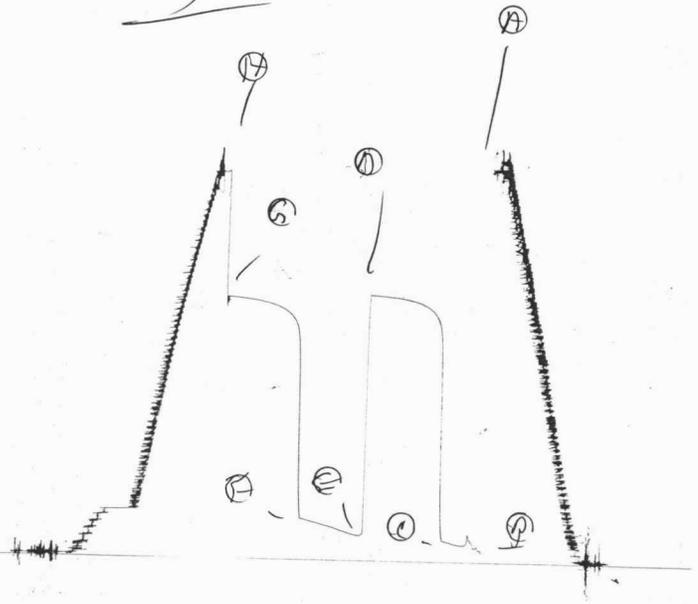
**PRESSURE BREAKDOWN**

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: _____ Inc.		Breakdown: _____ Inc.		Breakdown: _____ Inc.		Breakdown: _____ Inc.	
of <u>5</u> mins. and a		of <u>3</u> mins. and a		of <u>5</u> mins. and a		of <u>3</u> mins. and a	
final inc. of <u>0</u> Min.		final inc. of <u>0</u> Min.		final inc. of <u>0</u> Min.		final inc. of <u>0</u> Min.	
Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 0	<u>39</u>	0	<u>99</u>	0	<u>122</u>	0	<u>200</u>
P 2 5	<u>66</u>	3	<u>522</u>	5	<u>122</u>	3	<u>838</u>
P 3 10	<u>104</u>	6	<u>1191</u>	10	<u>129</u>	6	<u>1186</u>
P 4 15	<u>78</u>	9	<u>1240</u>	15	<u>141</u>	9	<u>1222</u>
P 5 20	<u>81</u>	12	<u>1262</u>	20	<u>152</u>	12	<u>1242</u>
P 6 25	<u>91</u>	15	<u>1282</u>	25	<u>162</u>	15	<u>1258</u>
P 7 30	<u>99</u>	18	<u>1294</u>	30	<u>170</u>	18	<u>1270</u>
P 8 35		21	<u>1302</u>	35	<u>181</u>	21	<u>1280</u>
P 9 40		24	<u>1311</u>	40	<u>188</u>	24	<u>1286</u>
P10 45		27	<u>1315</u>	45	<u>200</u>	27	<u>1292</u>
P11 50		30	<u>1324</u>	50		30	<u>1297</u>
P12 55		33	<u>1324</u>	55		33	<u>1302</u>
P13 60		36	<u>1327</u>	60		36	<u>1306</u>
P14 65		39	<u>1330</u>	65		39	<u>1309</u>
P15 70		42	<u>1332</u>	70		42	<u>1312</u>
P16 75		45	<u>1335</u>	75		45	<u>1315</u>
P17 80		48	<u>1337</u>	80		48	<u>1317</u>
P18 85		51	<u>1338</u>	85		51	<u>1319</u>
P19 90		54	<u>1339</u>	90		54	<u>1320</u>
P20 95		57	<u>1340</u>	95		57	<u>1321</u>
100		60	<u>1341</u>	100		60	<u>1322</u>

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KT 18502

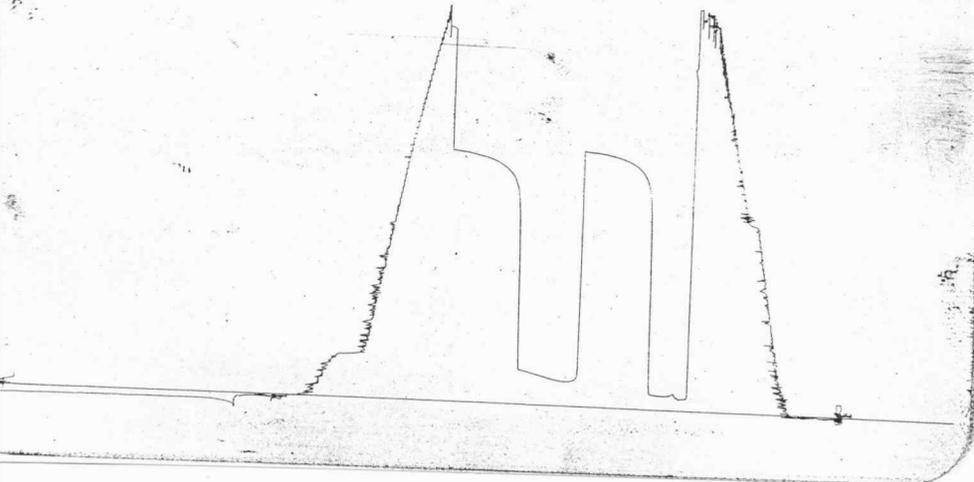
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# FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone 1 - 800-688-7021

DST REPORT

GENERAL INFORMATION

DATE : 7/12/93  
CUSTOMER : THUNDERBIRD DRILLING INC  
WELL : #B-1 TEST: 4  
ELEVATION: 2880 GR  
SECTION : 25  
RANGE : 32W COUNTY: RAWLINS  
GAUGE SN#: 13760 RANGE : 3950  
TICKET : 18503  
LEASE : WAHRMAN  
GEOLOGIST: AIKINS  
FORMATION: L KANSAS CITY J  
TOWNSHIP : 1S  
STATE : KS  
CLOCK : 12

WELL INFORMATION

PERFORATION INTERVAL FROM: 3986.00 ft TO: 4030.00 ft TVD: 4030.0 ft  
DEPTH OF SELECTIVE ZONE: TEST TYPE: OIL  
DEPTH OF RECORDERS: 3989.0 ft 3992.0 ft  
TEMPERATURE: 118.0  
DRILL COLLAR LENGTH: 0.0 ft I.D.: 0.000 in  
WEIGHT PIPE LENGTH : 633.0 ft I.D.: 3.200 in  
DRILL PIPE LENGTH : 3333.0 ft I.D.: 3.800 in  
TEST TOOL LENGTH : 20.0 ft TOOL SIZE : 5.500 in  
ANCHOR LENGTH : 44.0 ft ANCHOR SIZE: 5.500 in  
SURFACE CHOKE SIZE : 0.750 in BOTTOM CHOKE SIZE: 0.750 in  
MAIN HOLE SIZE : 7.875 in TOOL JOINT SIZE : 4.5XH  
PACKER DEPTH: 3981.0 ft SIZE: 6.750 in  
PACKER DEPTH: 3986.0 ft SIZE: 6.750 in  
PACKER DEPTH: 0.0 ft SIZE: 0.000 in  
PACKER DEPTH: 0.0 ft SIZE: 0.000 in

MUD INFORMATION

DRILLING CON. : ABERCROMBIE RIG 4  
MUD TYPE : CHEMICAL VISCOSITY : 44.00 cp  
WEIGHT : 9.400 ppg WATER LOSS: 12.000 cc  
CHLORIDES : 1200 ppm  
JARS-MAKE :  
DID WELL FLOW?: NO SERIAL NUMBER:  
REVERSED OUT?: NO

COMMENTS

Comment

INITIAL FLOW PERIOD STRONG BLOW - BOTTOM OF BUCKET  
IN 15 MINUTES . FINAL FLOW PERIOD STRONG BLOW -  
BOTTOM OF BUCKET IN 11 MINUTES.

DST REPORT (CONTINUED)

COMMENTS (CONTINUED)

Comment

SLIGHT PLUGGING ON INITIAL FLOW PERIOD.

FLUID RECOVERY

Feet of Fluid	% Oil	% Gas	% Water	% Mud	Comments
339.0	100.0	0.0	0.0	0.0	OIL 36 GRAVITY @ 60 DEG MUD CUT OIL
120.0	60.0	0.0	0.0	40.0	

RATE INFORMATION

OIL VOLUME:	4.0881 STB	TOTAL FLOW TIME:	75.0000 min.
GAS VOLUME:	0.0000 SCF	AVERAGE OIL RATE:	87.6580 STB/D
MUD VOLUME:	0.4774 STB	AVERAGE WATER RATE:	0.0000 STB/D
WATER VOLUME:	0.0000 STB		
TOTAL FLUID :	4.5655 STB		

FIELD TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 1986.00

Description	Duration	p1	p End
INITIAL FLOW	30.00	39.00	97.00
INITIAL SHUT-IN	60.00		1338.00
FINAL FLOW	45.00	117.00	205.00
FINAL SHUT-IN	60.00		1309.00

FINAL HYDROSTATIC PRESSURE: 1956.00

DST REPORT (CONTINUED)

OFFICE TIME & PRESSURE INFORMATION

INITIAL HYDROSTATIC PRESSURE: 1994.00

<u>Description</u>	<u>Duration</u>	<u>p1</u>	<u>p End</u>
INITIAL FLOW	30.00	39.00	99.00
INITIAL SHUT-IN	60.00		1341.00
FINAL FLOW	45.00	123.00	200.00
FINAL SHUT-IN	60.00		1322.00

FINAL HYDROSTATIC PRESSURE: 1957.00

PRESSURE TRANSIENT REPORT

GENERAL INFORMATION

DATE : 7/12/93	TICKET : 18503
CUSTOMER : THUNDERBIRD DRILLING INC	LEASE : WAHRMAN
WELL : #B-1                      TEST: 4	GEOLOGIST: AIKINS
ELEVATION: 2880 GR	FORMATION: L KANSAS CITY J
SECTION : 25	TOWNSHIP : 1S
RANGE : 32W                      COUNTY: RAWLINS	STATE : KS
GAUGE SN#: 13760                RANGE : 3950	CLOCK : 12

INITIAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	39.00	39.00
5.00	66.00	27.00
10.00	104.00	38.00
15.00	78.00	-26.00
20.00	81.00	3.00
25.00	91.00	10.00
30.00	99.00	8.00

INITIAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	522.00	522.00	0.00
6.00	1191.00	669.00	0.00
9.00	1240.00	49.00	0.00
12.00	1263.00	23.00	0.00
15.00	1282.00	19.00	0.00
18.00	1294.00	12.00	0.00
21.00	1302.00	8.00	0.00
24.00	1311.00	9.00	0.00
27.00	1315.00	4.00	0.00
30.00	1321.00	6.00	0.00
33.00	1324.00	3.00	0.00
36.00	1327.00	3.00	0.00
39.00	1330.00	3.00	0.00
42.00	1333.00	3.00	0.00
45.00	1335.00	2.00	0.00
48.00	1337.00	2.00	0.00
51.00	1338.00	1.00	0.00
54.00	1339.00	1.00	0.00
57.00	1340.00	1.00	0.00

PRESSURE TRANSIENT REPORT (CONTINUED)

INITIAL SHUT IN (CONTINUED)

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
60.00	1341.00	1.00	0.00

FINAL FLOW

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>
0.00	123.00	123.00
5.00	123.00	0.00
10.00	129.00	6.00
15.00	141.00	12.00
20.00	152.00	11.00
25.00	162.00	10.00
30.00	170.00	8.00
35.00	181.00	11.00
40.00	188.00	7.00
45.00	200.00	12.00

FINAL SHUT IN

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
3.00	838.00	838.00	0.00
6.00	1186.00	348.00	0.00
9.00	1222.00	36.00	0.00
12.00	1243.00	21.00	0.00
15.00	1258.00	15.00	0.00
18.00	1270.00	12.00	0.00
21.00	1280.00	10.00	0.00
24.00	1286.00	6.00	0.00
27.00	1292.00	6.00	0.00
30.00	1297.00	5.00	0.00
33.00	1302.00	5.00	0.00
36.00	1306.00	4.00	0.00
39.00	1309.00	3.00	0.00
42.00	1313.00	4.00	0.00
45.00	1315.00	2.00	0.00
48.00	1317.00	2.00	0.00
51.00	1319.00	2.00	0.00
54.00	1320.00	1.00	0.00
57.00	1321.00	1.00	0.00

PRESSURE TRANSIENT REPORT (CONTINUED)

FINAL SHUT IN (CONTINUED)

<u>Time (min)</u>	<u>Pressure</u>	<u>Delta P</u>	<u>Horner T</u>
60.00	1322.00	1.00	0.00