



Home Office: Wichita, Kansas 67201

P.O. Box 1599

(316) 262-5861

Company Thunderbird Drilling, Inc. Lease & Well No. Grube "C" #1
Elevation 3024 Kelly Bushing Formation Oread Effective Pay - Ft. Ticker No. 9454
Date 2/18/81 Sec. 6 Twp 19S Range 33W County Scott State Kansas
Test Approved by Mark A. Thompson Western Representative Dave Sloan
Formation Test No. 1 Interval Tested from 3878 ft. to 3937 ft. Total Depth 3937 ft.
Packer Depth 3873 ft. Size 6 5/8 in. Packer Depth - ft. Size - in.
Packer Depth 3878 ft. Size 6 5/8 in. Packer Depth - ft. Size - in.
Depth of Selective Zone Set -
Top Recorder Depth (Inside) 3891 ft. Recorder Number 2604 Cap. 4150
Bottom Recorder Depth (Outside) 3897 ft. Recorder Number 6246 Cap. 5200
Below Straddle Recorder Depth - ft. Recorder Number - Cap. -
Drilling Contractor Thunderbird Drilling Rig #2 Drill Collar Length - I. D. - in.
Mud Type starch Viscosity 50 Weight Pipe Length 540 I. D. 3.2 in.
Weight 9.7 Water Loss 14.2 cc. Drill Pipe Length 3318 I. D. 3.8 in.
Chlorides 31,000 P.P.M. Test Tool Length 20 ft. Tool Size 5 1/2 OD in.
Jars: Make - Serial Number - Anchor Length 32 1/2 DP + 27 ft. Size 5 1/2 OD in.
Did Well Flow? N Reversed Out Yes 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 XH in.

Blow: Strong through initial flow peirod decreasing to moderate blow through final flow period.

Recovered 1178 ft. of muddy water

Recovered - ft. of -

Recovered - ft. of -

Recovered - ft. of -

Recovered - ft. of -

Remarks: -

Time Set Packer(s) 2:20 ~~A.M.~~ P.M. Time Started Off Bottom 4:50 ~~A.M.~~ P.M. Maximum Temperature 112°
Initial Hydrostatic Pressure 1979 P.S.I.
Initial Flow Period 30 Minutes (B) 106 P.S.I. to (C) 359 P.S.I.
Initial Closed In Period 42 Minutes (D) 1024 P.S.I.
Final Flow Period 30 Minutes (E) 485 P.S.I. to (F) 542 P.S.I.
Final Closed In Period 42 Minutes (G) 1025 P.S.I.
Final Hydrostatic Pressure 1968 P.S.I. (H)

WESTERN TESTING CO., INC.

Pressure Data

Date 2/18/81 Test Ticket No. 9454
 Recorder No. 2604 Capacity 4150 Location 3891 Ft.
 Clock No. - Elevation 3024 Kelly Bushing Well Temperature 112 °F

Point	Pressure	Time Given	Time Computed
A. Initial Hydrostatic Mud	<u>1979</u> P.S.I.	<u>2:20P</u> M	
B. First Initial Flow Pressure	<u>106</u> P.S.I.	<u>30</u> Mins.	<u>30</u> Mins.
C. First Final Flow Pressure	<u>359</u> P.S.I.	<u>45</u> Mins.	<u>42</u> Mins.
D. Initial Closed-in Pressure	<u>1024</u> P.S.I.	<u>30</u> Mins.	<u>30</u> Mins.
E. Second Initial Flow Pressure	<u>485</u> P.S.I.	<u>45</u> Mins.	<u>42</u> Mins.
F. Second Final Flow Pressure	<u>542</u> P.S.I.		
G. Final Closed-in Pressure	<u>1025</u> P.S.I.		
H. Final Hydrostatic Mud	<u>1968</u> P.S.I.		

PRESSURE BREAKDOWN

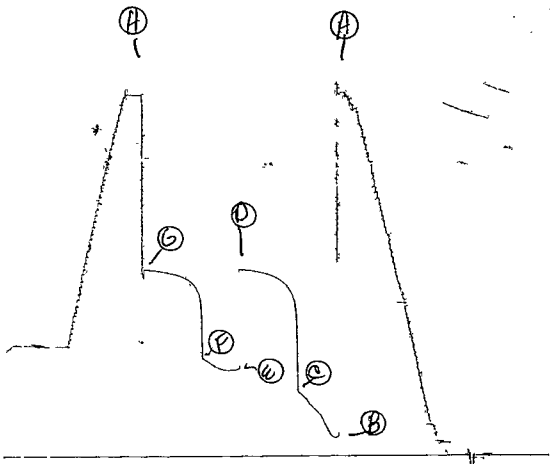
First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: <u>6</u> Inc.		Breakdown: <u>14</u> Inc.		Breakdown: <u>6</u> Inc.		Breakdown: <u>14</u> Inc.	
of <u>5</u> mins. and a		of <u>3</u> mins. and a		of <u>5</u> mins. and a		of <u>3</u> mins. and a	
final inc. of <u>0</u> 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 <u>0</u>	<u>106</u>	<u>0</u>	<u>359</u>	<u>0</u>	<u>485</u>	<u>0</u>	<u>542</u>
P 2 <u>5</u>	<u>113</u>	<u>3</u>	<u>859</u>	<u>5</u>	<u>481</u>	<u>3</u>	<u>906</u>
P 3 <u>10</u>	<u>179</u>	<u>6</u>	<u>912</u>	<u>10</u>	<u>479</u>	<u>6</u>	<u>941</u>
P 4 <u>15</u>	<u>243</u>	<u>9</u>	<u>941</u>	<u>15</u>	<u>485</u>	<u>9</u>	<u>964</u>
P 5 <u>20</u>	<u>277</u>	<u>12</u>	<u>962</u>	<u>20</u>	<u>504</u>	<u>12</u>	<u>977</u>
P 6 <u>25</u>	<u>329</u>	<u>15</u>	<u>977</u>	<u>25</u>	<u>529</u>	<u>15</u>	<u>990</u>
P 7 <u>30</u>	<u>359</u>	<u>18</u>	<u>987</u>	<u>30</u>	<u>542</u>	<u>18</u>	<u>995</u>
P 8		<u>21</u>	<u>998</u>			<u>21</u>	<u>1002</u>
P 9		<u>24</u>	<u>1004</u>			<u>24</u>	<u>1005</u>
P10		<u>27</u>	<u>1008</u>			<u>27</u>	<u>1009</u>
P11		<u>30</u>	<u>1013</u>			<u>30</u>	<u>1013</u>
P12		<u>33</u>	<u>1017</u>			<u>33</u>	<u>1017</u>
P13		<u>36</u>	<u>1021</u>			<u>36</u>	<u>1021</u>
P14		<u>39</u>	<u>1023</u>			<u>39</u>	<u>1024</u>
P15		<u>42</u>	<u>1024</u>			<u>42</u>	<u>1025</u>
P16							
P17							
P18							
P19							
P20							

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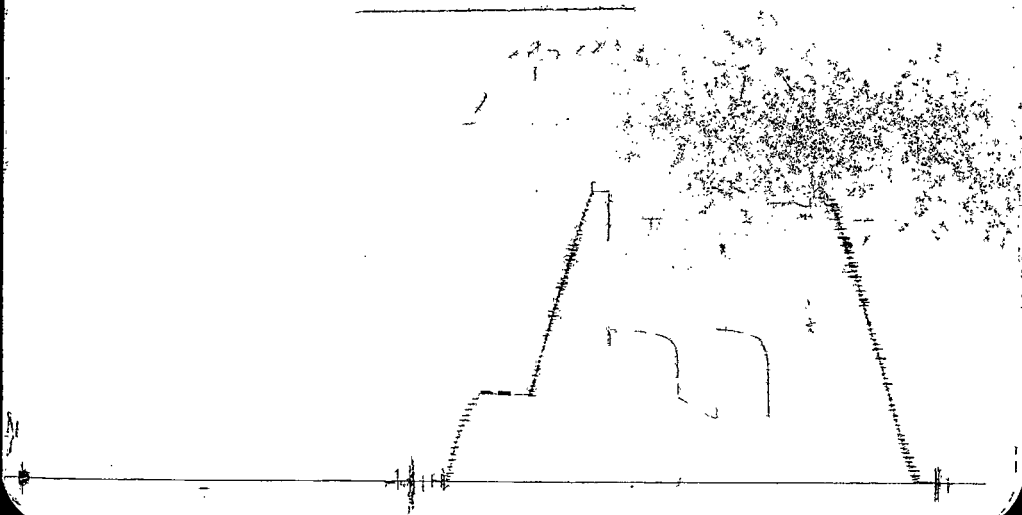
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Spk # 9454
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Thunder Bird
Grube C-1
DST-1





Home Office: Wichita, Kansas 67201
P.O. Box 1599 (316) 262-5861

Company Thunderbird Drilling, Inc. Lease & Well No. #1 Grube "C"
Elevation 3024 Kelly Bushing Formation Kansas City Effective Pay - Ft. Ticket No. 8906
Date 2/19/81 Sec 6 Twp 19S Range 33W County Scott State Kansas
Test Approved by Mark A. Thompson Western Representative Ken Metzler
Formation Test No. 2 Interval Tested from 3972 ft. to 4014 ft. Total Depth 4014 ft.
Packer Depth 3967 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Packer Depth 3972 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Depth of Selective Zone Set -
Top Recorder Depth (Inside) 4006 ft. Recorder Number 1564 Cap. 3150
Bottom Recorder Depth (Outside) 4009 ft. Recorder Number 4331 Cap. 4150
Below Straddle Recorder Depth - ft. Recorder Number - Cap. -
Drilling Contractor Thunderbird Rig #2 Drill Collar Length - I. D. - in.
Mud Type Starch Viscosity 44 Weight Pipe Length 568 I. D. 2.76 in.
Weight 9.6 Water Loss 15.2 cc. Drill Pipe Length 3415 I. D. 3.8 in.
Chlorides 29,000 P.P.M. Test Tool Length 19 ft. Tool Size 5 1/2 in.
Jars: Make No Serial Number - Anchor Length 42 ft. Size 5 1/2 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 FH in.

Blow: Very weak blow throughout test

Recovered 62 ft. of muddy salt water with few specks oil at top

Recovered ft. of

Recovered ft. of

Recovered ft. of

Recovered ft. of

Remarks:

Time Set Packer(s) 10:12 A.M. Time Started Off Bottom 1:30 A.M. Maximum Temperature 112
Initial Hydrostatic Pressure 2089 P.S.I.
Initial Flow Period 45 Minutes (B) 47 P.S.I. to (C) 53 P.S.I.
Initial Closed In Period 42 Minutes (D) 572 P.S.I.
Final Flow Period 45 Minutes (E) 81 P.S.I. to (F) 72 P.S.I.
Final Closed In Period 57 Minutes (G) 1028 P.S.I.
Final Hydrostatic Pressure 2072 P.S.I. (H)

WESTERN TESTING CO., INC.

Pressure Data

Date 2/19/81 Test Ticket No. 8906
 Recorder No. 1564 Capacity 3150 Location 4006 Ft.
 Clock No. - Elevation 3024 Kelly Bushing Well Temperature 112 °F

Point	Pressure	Time Given	Time Computed
A Initial Hydrostatic Mud	<u>2089</u> P.S.I.	<u>10:12A</u> M	
B First Initial Flow Pressure	<u>47</u> P.S.I.	<u>45</u> Mins.	<u>45</u> Mins.
C First Final Flow Pressure	<u>53</u> P.S.I.	<u>45</u> Mins.	<u>42</u> Mins.
D Initial Closed-in Pressure	<u>572</u> P.S.I.	<u>45</u> Mins.	<u>45</u> Mins.
E Second Initial Flow Pressure	<u>81</u> P.S.I.	<u>60</u> Mins.	<u>57</u> Mins.
F Second Final Flow Pressure	<u>72</u> P.S.I.		
G Final Closed-in Pressure	<u>1028</u> P.S.I.		
H Final Hydrostatic Mud	<u>2072</u> P.S.I.		

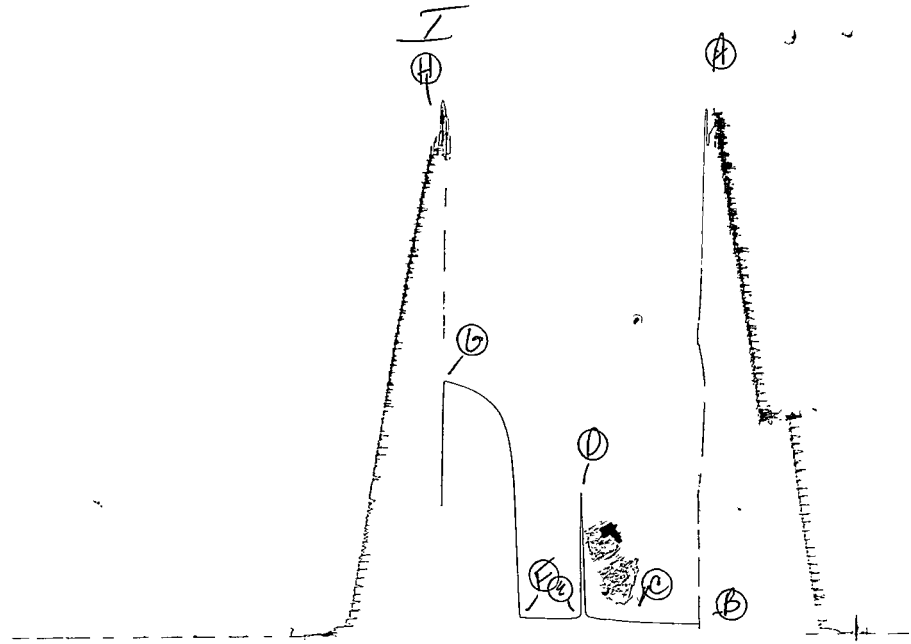
PRESSURE BREAKDOWN

First Flow Pressure Breakdown: <u>9</u> Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.		Initial Shut-In Breakdown: <u>14</u> Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.		Second Flow Pressure Breakdown: <u>9</u> Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.		Final Shut-In Breakdown: <u>19</u> Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.	
Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 <u>0</u>	<u>47</u>	<u>0</u>	<u>53</u>	<u>0</u>	<u>81</u>	<u>0</u>	<u>72</u>
P 2 <u>5</u>	<u>47</u>	<u>3</u>	<u>54</u>	<u>5</u>	<u>70</u>	<u>3</u>	<u>374</u>
P 3 <u>10</u>	<u>46</u>	<u>6</u>	<u>55</u>	<u>10</u>	<u>68</u>	<u>6</u>	<u>687</u>
P 4 <u>15</u>	<u>47</u>	<u>9</u>	<u>56</u>	<u>15</u>	<u>68</u>	<u>9</u>	<u>800</u>
P 5 <u>20</u>	<u>48</u>	<u>12</u>	<u>57</u>	<u>20</u>	<u>68</u>	<u>12</u>	<u>857</u>
P 6 <u>25</u>	<u>49</u>	<u>15</u>	<u>59</u>	<u>25</u>	<u>69</u>	<u>15</u>	<u>895</u>
P 7 <u>30</u>	<u>50</u>	<u>18</u>	<u>62</u>	<u>30</u>	<u>70</u>	<u>18</u>	<u>918</u>
P 8 <u>35</u>	<u>51</u>	<u>21</u>	<u>63</u>	<u>35</u>	<u>71</u>	<u>21</u>	<u>939</u>
P 9 <u>40</u>	<u>52</u>	<u>24</u>	<u>64</u>	<u>40</u>	<u>71</u>	<u>24</u>	<u>953</u>
P10 <u>45</u>	<u>53</u>	<u>27</u>	<u>65</u>	<u>45</u>	<u>72</u>	<u>27</u>	<u>965</u>
P11		<u>30</u>	<u>67</u>			<u>30</u>	<u>976</u>
P12		<u>33</u>	<u>71</u>			<u>33</u>	<u>986</u>
P13		<u>36</u>	<u>73</u>			<u>36</u>	<u>994</u>
P14		<u>39</u>	<u>87</u>			<u>39</u>	<u>1002</u>
P15		<u>42</u>	<u>572</u>			<u>42</u>	<u>1008</u>
P16						<u>45</u>	<u>1013</u>
P17						<u>48</u>	<u>1017</u>
P18						<u>51</u>	<u>1022</u>
P19						<u>54</u>	<u>1027</u>
P20						<u>57</u>	<u>1028</u>

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NK #8906

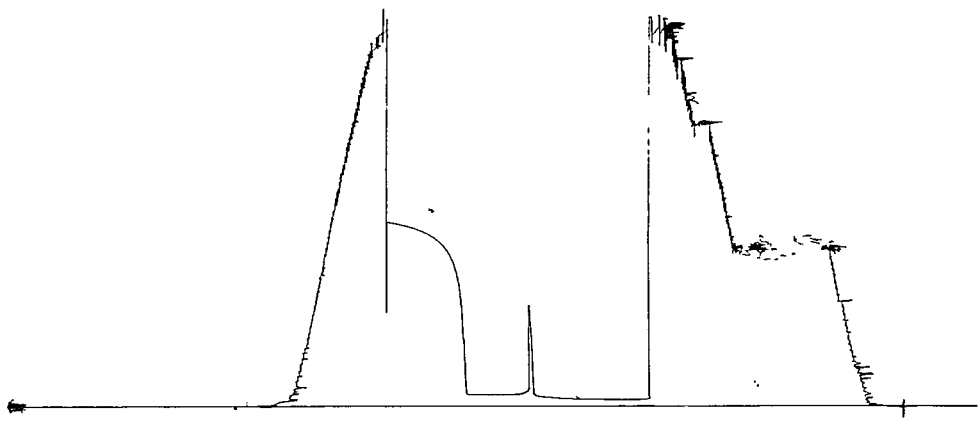
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Home Office: Wichita, Kansas 67201

P.O. Box 1599

(316) 262-5861

Company Thunderbird Drilling, Inc. Lease & Well No. #1 Grube "C"
Elevation 3024 Kelly Bushing Formation Kansas City Effective Pay - Ft. Ticket No. 8907
Date 2/20/81 Sec 6 Twp 19S Range 33W County Scott State Kansas
Test Approved by Mark A. Thompson Western Representative Ken Metzler
Formation Test No. 3 Interval Tested from 4152 ft. to 4220 ft. Total Depth 4220 ft.
Packer Depth 4147 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Packer Depth 4152 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Depth of Selective Zone Set -
Top Recorder Depth (Inside) 4160 ft. Recorder Number 1564 Cap 3150
Bottom Recorder Depth (Outside) 4163 ft. Recorder Number 4331 Cap 4150
Below Straddle Recorder Depth - ft. Recorder Number - Cap -
Drilling Contractor Thunderbird Rig #2 Drill Collar Length - I. D. - in.
Mud Type Starch Viscosity 45 Weight Pipe Length 568 I. D. 2.76 in.
Weight 9.9 Water Loss 13.0 cc. Drill Pipe Length 3610 I. D. 3.8 in.
Chlorides 30,000 P.P.M. Test Tool Length 19 ft. Tool Size 5 1/2 in.
Jars: Make No Serial Number - Anchor Length 68 ft. Size 5 1/2 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 FH in.

Blow: Very weak blow building to fair blow throughout test.

Recovered 235 ft. of muddy salt water with trace of oil at top

Recovered ft. of

Recovered ft. of

Recovered ft. of

Recovered ft. of

Remarks:

Time Set Packer(s) 7:27 AM P.M. Time Started Off Bottom 10:30 AM P.M. Maximum Temperature 117
Initial Hydrostatic Pressure (A) 2277 P.S.I.
Initial Flow Period Minutes 30 (B) 46 P.S.I. to (C) 68 P.S.I.
Initial Closed In Period Minutes 45 (D) 1155 P.S.I.
Final Flow Period Minutes 45 (E) 114 P.S.I. to (F) 155 P.S.I.
Final Closed In Period Minutes 60 (G) 1140 P.S.I.
Final Hydrostatic Pressure (H) 2258 P.S.I.

WESTERN TESTING CO., INC.

Pressure Data

Date 2/20/81 Test Ticket No. 8907
 Recorder No. 4331 Capacity 4150 Location 4163 Fr.
 Clock No. - Elevation 3024 Kelly Bushing Well Temperature 117 °F
 Point Pressure Time Given Time Computed
 A. Initial Hydrostatic Mud 2277 P.S.I. Open Tool 7:27P M
 B First Initial Flow Pressure 46 P.S.I. First Flow Pressure 30 Mins. 30 Mins.
 C First Final Flow Pressure 68 P.S.I. Initial Closed-in Pressure 45 Mins. 45 Mins.
 D Initial Closed-in Pressure 1155 P.S.I. Second Flow Pressure 45 Mins. 45 Mins.
 E Second Initial Flow Pressure 114 P.S.I. Final Closed-in Pressure 60 Mins. 60 Mins.
 F Second Final Flow Pressure 155 P.S.I.
 G Final Closed-in Pressure 1140 P.S.I.
 H Final Hydrostatic Mud 2258 P.S.I.

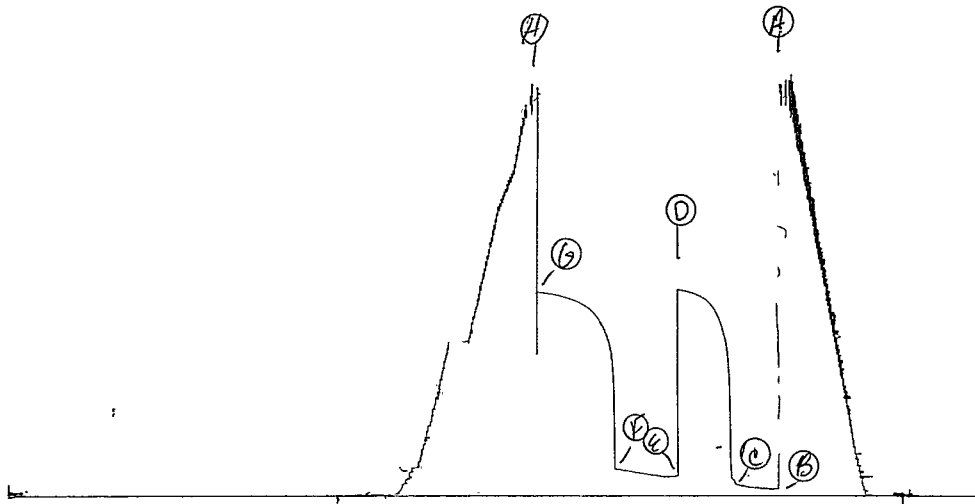
PRESSURE BREAKDOWN

First Flow Pressure Breakdown: <u>6</u> Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.		Initial Shut-In Breakdown: <u>15</u> Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.		Second Flow Pressure Breakdown: <u>9</u> Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.		Final Shut-In Breakdown: <u>20</u> Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.	
Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 <u>0</u>	<u>46</u>	<u>0</u>	<u>68</u>	<u>0</u>	<u>114</u>	<u>0</u>	<u>155</u>
P 2 <u>5</u>	<u>44</u>	<u>3</u>	<u>100</u>	<u>5</u>	<u>114</u>	<u>3</u>	<u>810</u>
P 3 <u>10</u>	<u>47</u>	<u>6</u>	<u>599</u>	<u>10</u>	<u>114</u>	<u>6</u>	<u>890</u>
P 4 <u>15</u>	<u>51</u>	<u>9</u>	<u>849</u>	<u>15</u>	<u>118</u>	<u>9</u>	<u>940</u>
P 5 <u>20</u>	<u>52</u>	<u>12</u>	<u>935</u>	<u>20</u>	<u>122</u>	<u>12</u>	<u>983</u>
P 6 <u>25</u>	<u>61</u>	<u>15</u>	<u>1000</u>	<u>25</u>	<u>128</u>	<u>15</u>	<u>1015</u>
P 7 <u>30</u>	<u>68</u>	<u>18</u>	<u>1045</u>	<u>30</u>	<u>133</u>	<u>18</u>	<u>1034</u>
P 8		<u>21</u>	<u>1074</u>	<u>35</u>	<u>140</u>	<u>21</u>	<u>1055</u>
P 9		<u>24</u>	<u>1098</u>	<u>40</u>	<u>147</u>	<u>24</u>	<u>1070</u>
P10		<u>27</u>	<u>1113</u>	<u>45</u>	<u>155</u>	<u>27</u>	<u>1081</u>
P11		<u>30</u>	<u>1123</u>			<u>30</u>	<u>1091</u>
P12		<u>33</u>	<u>1134</u>			<u>33</u>	<u>1102</u>
P13		<u>36</u>	<u>1140</u>			<u>36</u>	<u>1109</u>
P14		<u>39</u>	<u>1149</u>			<u>39</u>	<u>1115</u>
P15		<u>42</u>	<u>1152</u>			<u>42</u>	<u>1121</u>
P16		<u>45</u>	<u>1155</u>			<u>45</u>	<u>1126</u>
P17						<u>48</u>	<u>1131</u>
P18						<u>51</u>	<u>1134</u>
P19						<u>54</u>	<u>1136</u>
P20						<u>57</u>	<u>1138</u>
						<u>60</u>	<u>1140</u>

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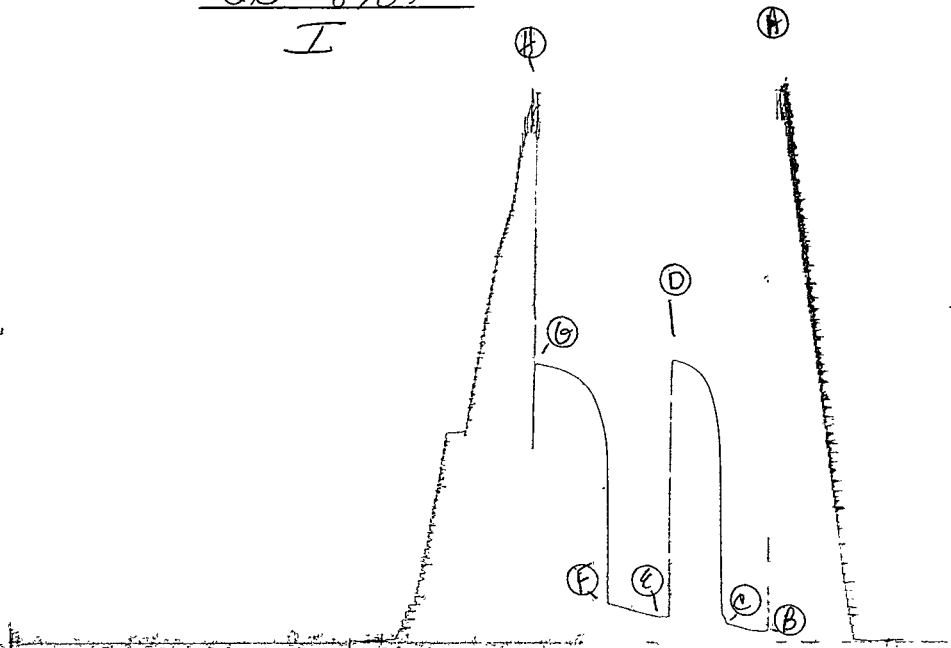
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Home Office: Wichita, Kansas 67201
P.O. Box 1599 (316) 262-5861

Company Thunderbird Drilling, Inc. Lease & Well No. #1 Grube "C"
Elevation 3024 Kelly Bushing Formation Kansas City Effective Pay - Ft. Ticket No. 8908
Date 2/21/81 Sec. 6 Twp. 19S Range 33W County Scott State Kansas
Test Approved by Mark A. Thompson Western Representative Ken Metzler
Formation Test No. 4 Interval Tested from 4232 ft. to 4271 ft. Total Depth 4271 ft.
Packer Depth 4227 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Packer Depth 4232 ft. Size 6 3/4 in. Packer Depth --- ft. Size - in.
Depth of Selective Zone Set -
Top Recorder Depth (Inside) 4240 ft. Recorder Number 1564 Cap. 3150
Bottom Recorder Depth (Outside) 4243 ft. Recorder Number 4331 Cap. 4150
Below Straddle Recorder Depth - ft. Recorder Number - Cap. -
Drilling Contractor Thunderbird Rig #2 Drill Collar Length - I. D. - in.
Mud Type Starch Viscosity 45 Weight Pipe Length 568 I. D. 2.76 in.
Weight 9.9 Water Loss 10.0 cc. Drill Pipe Length 3670 I. D. 3.8 in.
Chlorides 30,000 P.P.M. Test Tool Length 19 ft. Tool Size 5 1/2 in.
Jars: Make No Serial Number - Anchor Length 39 ft. Size 5 1/2 in.
Did Well Flow? No Reversed Out Yes 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 FH in.

Blow: Strong blow throughout test

Recovered 1950 ft. of Sulfur water

Recovered ft. of

Recovered ft. of

Recovered ft. of

Recovered ft. of

Remarks:

Time Set Packer(s) 4:42 ~~AM~~ P.M. Time Started Off Bottom 7:00 ~~AM~~ P.M. Maximum Temperature 123
Initial Hydrostatic Pressure (A) 2314 P.S.I.
Initial Flow Period Minutes 30 (B) 68 P.S.I. to (C) 564 P.S.I.
Initial Closed In Period Minutes 27 (D) 1202 P.S.I.
Final Flow Period Minutes 30 (E) 601 P.S.I. to (F) 860 P.S.I.
Final Closed In Period Minutes 42 (G) 1204 P.S.I.
Final Hydrostatic Pressure (H) 2283 P.S.I.

WESTERN TESTING CO., INC.

Pressure Data

Date 2/21/81 Test Ticket No. 8908

Recorder No. 1564 Capacity 3150 Location 4240 Ft.

Clock No. - Elevation 3024 Kelly Bushing Well Temperature 123 °F

Point	Pressure		Time Given	Time Computed
A. Initial Hydrostatic Mud	<u>2314</u>	P.S.I.	<u>4:42P</u>	<u>M</u>
B First Initial Flow Pressure	<u>68</u>	P.S.I.	<u>30</u>	<u>30</u> Mins.
C First Final Flow Pressure	<u>564</u>	P.S.I.	<u>30</u>	<u>27</u> Mins.
D Initial Closed-in Pressure	<u>1202</u>	P.S.I.	<u>30</u>	<u>30</u> Mins.
E Second Initial Flow Pressure	<u>601</u>	P.S.I.	<u>45</u>	<u>42</u> Mins.
F. Second Final Flow Pressure	<u>860</u>	P.S.I.		
G Final Closed-in Pressure	<u>1204</u>	P.S.I.		
H Final Hydrostatic Mud	<u>2283</u>	P.S.I.		

PRESSURE BREAKDOWN

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: <u>6</u> Inc.		Breakdown: <u>9</u> Inc.		Breakdown: <u>6</u> Inc.		Breakdown: <u>14</u> 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 <u>0</u>	<u>68</u>	<u>0</u>	<u>564</u>	<u>0</u>	<u>601</u>	<u>0</u>	<u>860</u>
P 2 <u>5</u>	<u>177</u>	<u>3</u>	<u>1172</u>	<u>5</u>	<u>631</u>	<u>3</u>	<u>1174</u>
P 3 <u>10</u>	<u>291</u>	<u>6</u>	<u>1183</u>	<u>10</u>	<u>681</u>	<u>6</u>	<u>1183</u>
P 4 <u>15</u>	<u>364</u>	<u>9</u>	<u>1190</u>	<u>15</u>	<u>729</u>	<u>9</u>	<u>1186</u>
P 5 <u>20</u>	<u>431</u>	<u>12</u>	<u>1193</u>	<u>20</u>	<u>779</u>	<u>12</u>	<u>1191</u>
P 6 <u>25</u>	<u>495</u>	<u>15</u>	<u>1196</u>	<u>25</u>	<u>824</u>	<u>15</u>	<u>1193</u>
P 7 <u>30</u>	<u>564</u>	<u>18</u>	<u>1198</u>	<u>30</u>	<u>860</u>	<u>18</u>	<u>1196</u>
P 8		<u>21</u>	<u>1200</u>			<u>21</u>	<u>1198</u>
P 9		<u>24</u>	<u>1201</u>			<u>24</u>	<u>1199</u>
P10		<u>27</u>	<u>1202</u>			<u>27</u>	<u>1200</u>
P11						<u>30</u>	<u>1201</u>
P12						<u>33</u>	<u>1202</u>
P13						<u>36</u>	<u>1203</u>
P14						<u>39</u>	<u>1203</u>
P15						<u>42</u>	<u>1204</u>
P16							
P17							
P18							
P19							
P20							

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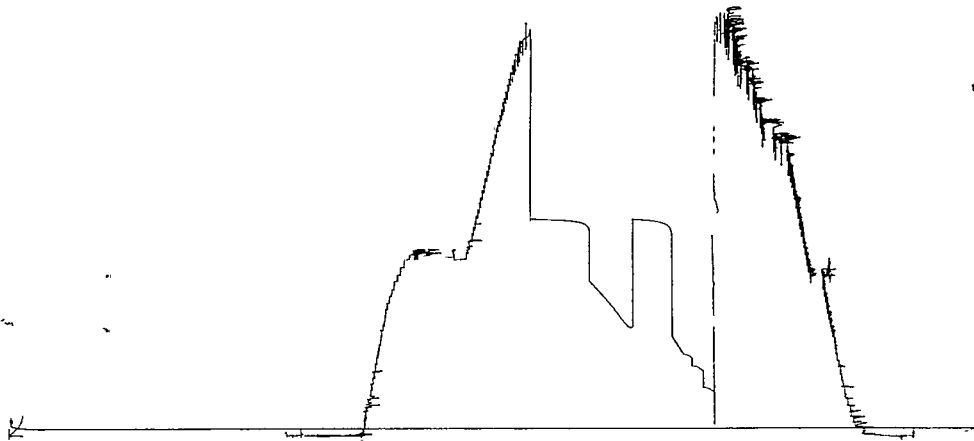
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Home Office: Wichita, Kansas 67201

P.O. Box 1599

(316) 262-5861

Company Thunderbird Drilling, Inc. Lease & Well No. Grube "C" #1
Elevation 3024 Kelly Bushing Cherokee Sand Formation Cherokee Sand Effective Pay - Ft. Ticket No. 8909
Date 2/24/81 Sec. 6 Twp 19S Range 33W County Scott State Kansas
Test Approved by Mark A. Thompson Western Representative Ken Metzler

Formation Test No. 5 Interval Tested from 4616 ft. to 4700 ft. Total Depth 4700 ft.
Packer Depth 4611 ft. Size 6 3/4 in. Packer Depth -- ft. Size - in.
Packer Depth 4616 ft. Size 6 3/4 in. Packer Depth -- ft. Size - in.

Depth of Selective Zone Set -
Top Recorder Depth (Inside) 4691 ft. Recorder Number 1564 Cap 3150
Bottom Recorder Depth (Outside) 4694 ft. Recorder Number 4331 Cap 4150
Below Straddle Recorder Depth - ft. Recorder Number - Cap -

Drilling Contractor Thunderbird Drilling Rig #2 Drill Collar Length - I. D. - in.
Mud Type starch Viscosity 47 Weight Pipe Length 568 I. D. 2.76 in.
Weight 10.0 Water Loss 13.2 cc. Drill Pipe Length 4099 I. D. 3.8 in.
Chlorides 30,000 P.P.M. Test Tool Length 19 ft. Tool Size 5 1/2 in.
Jars: Make No Serial Number - Anchor Length 84 ft. Size 5 1/2 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 FH in.

Blow: Very weak blow; died in twenty-five minutes initial flow period. No blow final flow period.

Recovered 30 ft. of slightly oil specked mud - show free oil in tool.
Recovered ft. of
Recovered ft. of
Recovered ft. of
Recovered ft. of

Remarks:

Time Set Packer(s) 12:27 A.M. PM Time Started Off Bottom 2:30 A.M. PM Maximum Temperature 122°
Initial Hydrostatic Pressure 2573 P.S.I.
Initial Flow Period 30 Minutes (B) 68 P.S.I. to (C) 73 P.S.I.
Initial Closed In Period 24 Minutes (D) 832 P.S.I.
Final Flow Period 30 Minutes (E) 99 P.S.I. to (F) 82 P.S.I.
Final Closed In Period 27 Minutes (G) 870 P.S.I.
Final Hydrostatic Pressure 2549 P.S.I. (H)

WESTERN TESTING CO., INC.

Pressure Data

Date 2/24/81 Test Ticker No. 8909
 Recorder No. 1564 Capacity 3150 Location 4691 Ft.
 Clock No. - Elevation 3024 Kelly Bushing Well Temperature 122 °F

Point	Pressure		Time Given	Time Computed
A. Initial Hydrostatic Mud	<u>2573</u> P.S.I.	Open Tool	<u>12:27A</u> M	
B. First Initial Flow Pressure	<u>68</u> P.S.I.	First Flow Pressure	<u>30</u> Mins.	<u>30</u> Mins.
C. First Final Flow Pressure	<u>73</u> P.S.I.	Initial Closed-in Pressure	<u>30</u> Mins.	<u>24</u> Mins.
D. Initial Closed-in Pressure	<u>832</u> P.S.I.	Second Flow Pressure	<u>30</u> Mins.	<u>30</u> Mins.
E. Second Initial Flow Pressure	<u>99</u> P.S.I.	Final Closed-in Pressure	<u>30</u> Mins.	<u>27</u> Mins.
F. Second Final Flow Pressure	<u>82</u> P.S.I.			
G. Final Closed-in Pressure	<u>870</u> P.S.I.			
H. Final Hydrostatic Mud	<u>2549</u> P.S.I.			

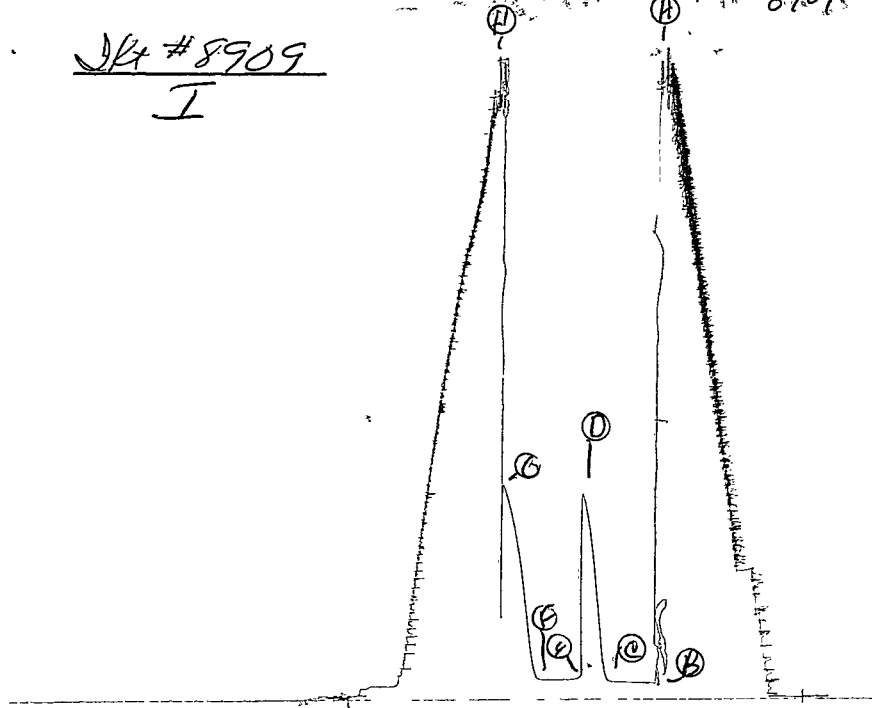
PRESSURE BREAKDOWN

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: <u>6</u> Inc.		Breakdown: <u>8</u> Inc.		Breakdown: <u>6</u> Inc.		Breakdown: <u>9</u> 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 <u>0</u>	<u>68</u>	<u>0</u>	<u>73</u>	<u>0</u>	<u>99</u>	<u>0</u>	<u>82</u>
P 2 <u>5</u>	<u>68</u>	<u>3</u>	<u>73</u>	<u>5</u>	<u>84</u>	<u>3</u>	<u>87</u>
P 3 <u>10</u>	<u>70</u>	<u>6</u>	<u>85</u>	<u>10</u>	<u>82</u>	<u>6</u>	<u>151</u>
P 4 <u>15</u>	<u>71</u>	<u>9</u>	<u>166</u>	<u>15</u>	<u>82</u>	<u>9</u>	<u>293</u>
P 5 <u>20</u>	<u>71</u>	<u>12</u>	<u>350</u>	<u>20</u>	<u>82</u>	<u>12</u>	<u>439</u>
P 6 <u>25</u>	<u>72</u>	<u>15</u>	<u>523</u>	<u>25</u>	<u>82</u>	<u>15</u>	<u>570</u>
P 7 <u>30</u>	<u>73</u>	<u>18</u>	<u>672</u>	<u>30</u>	<u>82</u>	<u>18</u>	<u>673</u>
P 8		<u>21</u>	<u>775</u>			<u>21</u>	<u>756</u>
P 9		<u>24</u>	<u>832</u>			<u>24</u>	<u>820</u>
P10						<u>27</u>	<u>870</u>
P11							
P12							
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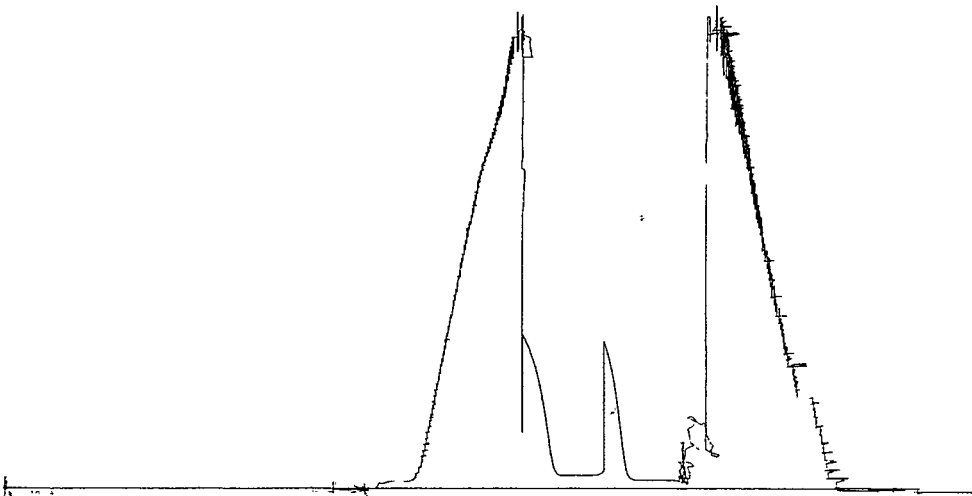
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Home Office: Wichita, Kansas 67201
P.O. Box 1599 (316) 262-5861

Company Thunderbird Drilling, Inc. Lease & Well No. Grube "C" #1
Elevation 3024 Kelly Bushing Formation Morrow Sand Effective Pay - Ft. Ticket No. 8910
Date 2/24/81 Sec. 6 Twp. 19S Range 33W County Scott State Kansas
Test Approved by Mark A. Thompson Western Representative Ken Metzler
Formation Test No. 6 Interval Tested from 4686 ft. to 4754 ft. Total Depth 4754 ft.
Packer Depth 4681 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Packer Depth 4686 ft. Size 6 3/4 in. Packer Depth - ft. Size - in.
Depth of Selective Zone Set -
Top Recorder Depth (Inside) 4690 ft. Recorder Number 1564 Cap. 3150
Bottom Recorder Depth (Outside) 4693 ft. Recorder Number 4331 Cap. 4150
Below Straddle Recorder Depth - ft. Recorder Number - Cap. -
Drilling Contractor Thunderbird Drilling Rig #2 Drill Collar Length - I. D. - in.
Mud Type starch Viscosity 51 Weight Pipe Length 568 I. D. 2.76 in.
Weight 10.0 Water Loss 14.0 cc. Drill Pipe Length 4151 I. D. 3.8 in.
Chlorides 34,000 P.P.M. Test Tool Length 19 ft. Tool Size 5 1/2 in.
Jars: Make No Serial Number - Anchor Length 68 ft. Size 5 1/2 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 FH in.

Blow: Weak blow building to good blow throughout test.

Recovered 500 ft. of muddy salt water - no show

Recovered ft. of

Recovered ft. of

Recovered ft. of

Recovered ft. of

Remarks:

Time Set Packer(s) 7:42 ~~A.M.~~ P.M. Time Started Off Bottom 10:45 ~~A.M.~~ P.M. Maximum Temperature 127°
Initial Hydrostatic Pressure 2565 P.S.I. (A)
Initial Flow Period 30 Minutes (B) 47 P.S.I. to (C) 120 P.S.I.
Initial Closed In Period 39 Minutes (D) 1156 P.S.I.
Final Flow Period 40 Minutes (E) 129 P.S.I. to (F) 241 P.S.I.
Final Closed In Period 57 Minutes (G) 1147 P.S.I.
Final Hydrostatic Pressure 2532 P.S.I. (H)

WESTERN TESTING CO., INC.

Pressure Data

Date 2/24/81 Recorder No. 1564 Capacity 3150 Test Ticket No. 8910
 Location 4690 Ft.
 Clock No. - Elevation 3024 Kelly Bushing Well Temperature 127 °F
 Point Pressure Time Given Time Computed
 A. Initial Hydrostatic Mud 2565 P.S.I. Open Tool 7:42P M
 B. First Initial Flow Pressure 47 P.S.I. First Flow Pressure 30 Mins. 30 Mins.
 C. First Final Flow Pressure 120 P.S.I. Initial Closed-in Pressure 45 Mins. 39 Mins.
 D. Initial Closed-in Pressure 1156 P.S.I. Second Flow Pressure 45 Mins. 40 Mins.
 E. Second Initial Flow Pressure 129 P.S.I. Final Closed-in Pressure 60 Mins. 57 Mins.
 F. Second Final Flow Pressure 241 P.S.I.
 G. Final Closed-in Pressure 1147 P.S.I.
 H. Final Hydrostatic Mud 2532 P.S.I.

PRESSURE BREAKDOWN

First Flow Pressure Breakdown: <u>6</u> Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.		Initial Shut-In Breakdown: <u>13</u> Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.		Second Flow Pressure Breakdown: <u>8</u> Inc. of <u>5</u> mins. and a final inc. of <u>0</u> Min.		Final Shut-In Breakdown: <u>19</u> Inc. of <u>3</u> mins. and a final inc. of <u>0</u> Min.	
Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 <u>0</u>	<u>47</u>	<u>0</u>	<u>120</u>	<u>0</u>	<u>129</u>	<u>0</u>	<u>241</u>
P 2 <u>5</u>	<u>48</u>	<u>3</u>	<u>1008</u>	<u>5</u>	<u>141</u>	<u>3</u>	<u>984</u>
P 3 <u>10</u>	<u>56</u>	<u>6</u>	<u>1054</u>	<u>10</u>	<u>155</u>	<u>6</u>	<u>1022</u>
P 4 <u>15</u>	<u>70</u>	<u>9</u>	<u>1077</u>	<u>15</u>	<u>171</u>	<u>9</u>	<u>1046</u>
P 5 <u>20</u>	<u>87</u>	<u>12</u>	<u>1095</u>	<u>20</u>	<u>185</u>	<u>12</u>	<u>1062</u>
P 6 <u>25</u>	<u>102</u>	<u>15</u>	<u>1107</u>	<u>25</u>	<u>200</u>	<u>15</u>	<u>1076</u>
P 7 <u>30</u>	<u>120</u>	<u>18</u>	<u>1119</u>	<u>30</u>	<u>215</u>	<u>18</u>	<u>1087</u>
P 8		<u>21</u>	<u>1125</u>	<u>35</u>	<u>225</u>	<u>21</u>	<u>1096</u>
P 9		<u>24</u>	<u>1133</u>	<u>40</u>	<u>241</u>	<u>24</u>	<u>1103</u>
P10		<u>27</u>	<u>1139</u>			<u>27</u>	<u>1111</u>
P11		<u>30</u>	<u>1145</u>			<u>30</u>	<u>1117</u>
P12		<u>33</u>	<u>1150</u>			<u>33</u>	<u>1122</u>
P13		<u>36</u>	<u>1155</u>			<u>36</u>	<u>1125</u>
P14		<u>39</u>	<u>1156</u>			<u>39</u>	<u>1130</u>
P15						<u>42</u>	<u>1134</u>
P16						<u>45</u>	<u>1137</u>
P17						<u>48</u>	<u>1141</u>
P18						<u>51</u>	<u>1144</u>
P19						<u>54</u>	<u>1145</u>
P20						<u>57</u>	<u>1147</u>

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