

Company Imperial Oil Company Lease & Well No. Piester - Howell #1-24
Elevation 2012 Kelly Bushing Formation Marmaton Effective Pay - Ft. Ticket No. 11901
Date 10/10 /81 Sec. 24 Twp. 29S Range 16W County Kiowa State Kansas
Test Approved by Douglas V. Davis, Jr. Western Representative Mike Rogers

Formation Test No. 1 Interval Tested from 4485 ft. to 4585 ft. Total Depth 4585 ft.
Packer Depth 4480 ft. Size 6 5/8 in. Packer Depth - ft. Size - in.
Packer Depth 4485 ft. Size 6 5/8 in. Packer Depth - ft. Size - in.
Depth of Selective Zone Set -

Top Recorder Depth (Inside) 4551 ft. Recorder Number 1566 Cap. 4300
Bottom Recorder Depth (Outside) 4555 ft. Recorder Number 3086 Cap. 4500
Below Straddle Recorder Depth - ft. Recorder Number - Cap. -

Drilling Contractor Gabbert - Jones Drlg. Rig #9 Drill Collar Length 355 I. D. 2.2 in.
Mud Type chemical Viscosity 70 Weight Pipe Length - I. D. - in.
Weight 9.4 Water Loss 15.1 cc. Drill Pipe Length 4101 I. D. 3.8 in.
Chlorides 24,000 P.P.M. Test Tool Length 29 ft. Tool Size 5 1/2 OD in.
Jars: Make WIC Serial Number 3660 Anchor Length 100 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 in.

Blow: Weak one fourth inch depleting on initial flow period. Dead on final flow period.
Flushed tool (Tool okay)

Recovered 45 ft. of drilling mud
Recovered ft. of
Recovered ft. of
Recovered ft. of
Recovered ft. of
Remarks:

Time Set Packer(s) 8:15 ~~A.M.~~ P.M. Time Started Off Bottom 11:15 ~~A.M.~~ P.M. Maximum Temperature 118°
Initial Hydrostatic Pressure 2217 (A) P.S.I.
Initial Flow Period 30 Minutes (B) 86 P.S.I. to (C) 64 P.S.I.
Initial Closed In Period 57 Minutes (D) 82 P.S.I.
Final Flow Period 30 Minutes (E) 80 P.S.I. to (F) 97 P.S.I.
Final Closed In Period 63 Minutes (G) 112 P.S.I.
Final Hydrostatic Pressure 2217 (H) P.S.I.

WESTERN TESTING CO., INC.

Pressure Data

Date 10/10/81

Test Ticket No. 11901

Recorder No. 1566

Capacity 4300

Location 4551 Ft.

Clock No. --

Elevation 2012 Kelly Bushing

Well Temperature 118 °F

Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	2217	P.S.I.	8:15P	M
B First Initial Flow Pressure	86	P.S.I.	30	Mins. 30 Mins.
C First Final Flow Pressure	64	P.S.I.	60	Mins. 57 Mins.
D Initial Closed-in Pressure	82	P.S.I.	30	Mins. 30 Mins.
E Second Initial Flow Pressure	80	P.S.I.	60	Mins. 63 Mins.
F Second Final Flow Pressure	97	P.S.I.		
G Final Closed-in Pressure	112	P.S.I.		
H Final Hydrostatic Mud	2217	P.S.I.		

PRESSURE BREAKDOWN

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: <u>6</u> Inc.		Breakdown: <u>19</u> Inc.		Breakdown: <u>6</u> Inc.		Breakdown: <u>21</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>86</u>	<u>0</u>	<u>64</u>	<u>0</u>	<u>80</u>	<u>0</u>	<u>97</u>
P 2 <u>5</u>	<u>85</u>	<u>3</u>	<u>62</u>	<u>5</u>	<u>FLUSHED TOOL</u>	<u>3</u>	<u>97</u>
P 3 <u>10</u>	<u>85</u>	<u>6</u>	<u>62</u>	<u>10</u>	<u>114</u>	<u>6</u>	<u>97</u>
P 4 <u>15</u>	<u>76</u>	<u>9</u>	<u>62</u>	<u>15</u>	<u>102</u>	<u>9</u>	<u>97</u>
P 5 <u>20</u>	<u>67</u>	<u>12</u>	<u>62</u>	<u>20</u>	<u>99</u>	<u>12</u>	<u>97</u>
P 6 <u>25</u>	<u>66</u>	<u>15</u>	<u>62</u>	<u>25</u>	<u>97</u>	<u>15</u>	<u>97</u>
P 7 <u>30</u>	<u>64</u>	<u>18</u>	<u>63</u>	<u>30</u>	<u>97</u>	<u>18</u>	<u>97</u>
P 8 _____		<u>21</u>	<u>64</u>			<u>21</u>	<u>98</u>
P 9 _____		<u>24</u>	<u>65</u>			<u>24</u>	<u>99</u>
P10 _____		<u>27</u>	<u>66</u>			<u>27</u>	<u>100</u>
P11 _____		<u>30</u>	<u>67</u>			<u>30</u>	<u>101</u>
P12 _____		<u>33</u>	<u>68</u>			<u>33</u>	<u>102</u>
P13 _____		<u>36</u>	<u>69</u>			<u>36</u>	<u>103</u>
P14 _____		<u>39</u>	<u>71</u>			<u>39</u>	<u>104</u>
P15 _____		<u>42</u>	<u>73</u>			<u>42</u>	<u>105</u>
P16 _____		<u>45</u>	<u>75</u>			<u>45</u>	<u>106</u>
P17 _____		<u>48</u>	<u>77</u>			<u>48</u>	<u>108</u>
P18 _____		<u>51</u>	<u>79</u>			<u>51</u>	<u>110</u>
P19 _____		<u>54</u>	<u>81</u>			<u>54</u>	<u>112</u>
P20 _____		<u>57</u>	<u>82</u>			<u>57</u>	<u>112</u>
						<u>60</u>	<u>112</u>
						<u>63</u>	<u>112</u>

WESTERN TESTING CO., INC.

Pressure Data

Date 10-10

Recorder No. 1566

Clock No. ---

Elevation 2012 KB

Capacity 4300

Test Ticket No. 11901

Location 4551 Ft

Well Temperature 118 °F

Point

Pressure

A Initial Hydrostatic Mud 2217 P.S.I.
 B First Initial Flow Pressure 86 P.S.I.
 C First Final Flow Pressure 64 P.S.I.
 D Initial Closed-in Pressure 82 P.S.I.
 E Second Initial Flow Pressure 80 P.S.I.
 F Second Final Flow Pressure 97 P.S.I.
 G Final Closed-in Pressure 112 P.S.I.
 H Final Hydrostatic Mud 2217 P.S.I.

Open Tool

First Flow Pressure

Initial Closed-in Pressure

Second Flow Pressure

Final Closed-in Pressure

Time
Given

Time
Computed

8:15 P M
30 Mins. 30 Mins
60 Mins. 57 Mins
30 Mins. 30 Mins
60 Mins. 63 Mins

PRESSURE BREAKDOWN

First Flow Pressure

Breakdown: 6 Inc.

of 5 mins. and a

final inc. of 0 Min.

Initial Shut-In

Breakdown: 19 Inc.

of 3 mins. and a

final inc. of 0 Min.

Second Flow Pressure

Breakdown: 6 Inc.

of 5 mins. and a

final inc. of 0 Min.

Final Shut-In

Breakdown: 21 Inc.

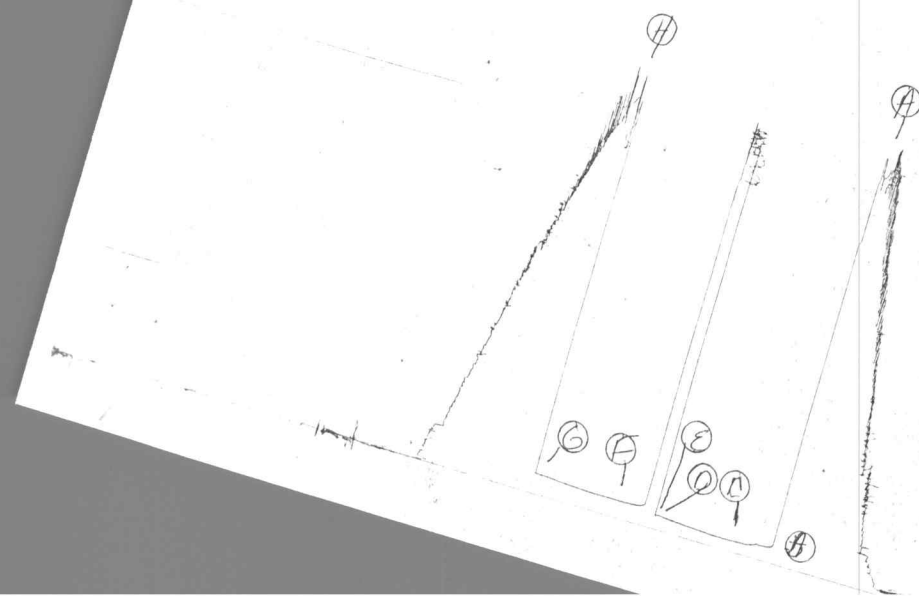
of 3 mins. and a

final inc. of 0 Min.

Point Mins.	Press.	Point Minutes	Press.	Point Minutes	Press.	Point Minutes	Press.
P 1 0	86	0	64	0	80	0	97
P 2 5	85	3	62	5	Flushed Tool	3	
P 3 10	85	6		10	114	6	
P 4 15	76	9		15	102	9	
P 5 20	67	12	62	20	99	12	
P 6 25	66	15	62	25	97	15	97
P 7 30	64	18	63	30	97	18	97
P 8 35		21	64	35		21	98
P 9 40		24	65	40		24	99
P10 45		27	66	45		27	100
P11 50		30	67	50		30	101
P12 55		33	68	55		33	102
P13 60		36	69	60		36	103
P14		39	71	65		39	104
P15		42	73	70		42	105
P16		45	75	75		45	106
P17		48	77	80		48	108
P18		51	79	85		51	110
P19		54	81	90		54	112
P20		57	82			57	
						60	
						63	112

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1566



WESTERN TESTING CO., INC.

Pressure Data

Date 10-11

Recorder No. 1566

Clock No. ---

Capacity 4300

Elevation 2012 KB

Test Ticket No. 11902

Location 4638 Ft.

Well Temperature 128 °F

Point

Pressure

A Initial Hydrostatic Mud 2340 P.S.I.
 B First Initial Flow Pressure 86 P.S.I.
 C First Final Flow Pressure 86 P.S.I.
 D Initial Closed-in Pressure 186 P.S.I.
 E Second Initial Flow Pressure 98 P.S.I.
 F Second Final Flow Pressure 98 P.S.I.
 G Final Closed-in Pressure 136 P.S.I.
 H Final Hydrostatic Mud 2286 P.S.I.

Open Tool

First Flow Pressure

Initial Closed-in Pressure

Second Flow Pressure

Final Closed-in Pressure

Time Given 4:30 P M
 Time Computed
60 Mins. 60 Mins.
60 Mins. 57 Mins.
60 Mins. 60 Mins.
60 Mins. 54 Mins.

PRESSURE BREAKDOWN

First Flow Pressure

Breakdown: 12 Inc.

of 5 mins. and a

final inc. of 0 Min.

Initial Shut-In

Breakdown: 19 Inc.

of 3 mins. and a

final inc. of 0 Min.

Second Flow Pressure

Breakdown: 12 Inc.

of 5 mins. and a

final inc. of 0 Min.

Final Shut-In

Breakdown: 18 Inc.

of 3 mins. and a

final inc. of 0 Min.

Point Mins.	Press.
P 1 0	86
P 2 5	
P 3 10	
P 4 15	
P 5 20	
P 6 25	
P 7 30	
P 8 35	
P 9 40	
P10 45	
P11 50	
P12 55	
P13 60	86
P14	
P15	
P16	
P17	
P18	
P19	
P20	

Point Minutes	Press.
0	86
3	91
6	92
9	94
12	96
15	98
18	100
21	102
24	104
27	106
30	113
33	121
36	130
39	138
42	145
45	153
48	162
51	171
54	180
57	186

Point Minutes	Press.
0	98
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
60	98
65	
70	
75	
80	
85	
90	

Point Minutes	Press.
0	98
3	
6	
9	
12	98
15	100
18	104
21	106
24	110
27	112
30	114
33	119
36	121
39	124
42	127
45	130
48	132
51	134
54	136

Company Imperial Oil Company Lease & Well No. Piester - Howell #1-24
Elevation 2012 Kelly Bushing Formation Cherokee Sand Effective Pay - Ft. Ticket No. 11902
Date 10/ 11/81 Sec. 24 Twp. 29S Range 16W County Kiowa State Kansas
Test Approved by Douglas V. Davis, Jr. Western Representative Mike Rogers
Formation Test No. 2 Interval Tested from 4607 ft. to 4660 ft. Total Depth 4660 ft.
Packer Depth 4602 ft. Size 6 5/8 in. Packer Depth - ft. Size - in.
Packer Depth 4607 ft. Size 6 5/8 in. Packer Depth - ft. Size - in.
Depth of Selective Zone Set -
Top Recorder Depth (Inside) 4638 ft. Recorder Number 1566 Cap. 4300
Bottom Recorder Depth (Outside) 4642 ft. Recorder Number 3086 Cap. 4500
Below Straddle Recorder Depth - ft. Recorder Number - Cap. -
Drilling Contractor Gabbert - Jones Drlg. Rig #9 Drill Collar Length 385 I. D. 2.2 in.
Mud Type chemical Viscosity 53 Weight Pipe Length - I. D. - in.
Weight 9.3 Water Loss 12.0 cc. Drill Pipe Length - I. D. 3.8 in.
Chlorides 25,000 P.P.M. Test Tool Length 29 ft. Tool Size 5 1/2 OD in.
Jars: Make WTC Serial Number 3660 Anchor Length 53 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 in.

Blow: Three inches on initial flow period; three inch depleting to two inches on final flow period.

Recovered 90 ft. of drilling mud with few spots of oil

Recovered - ft. of -

Recovered - ft. of -

Recovered - ft. of -

Recovered - ft. of -

Remarks: Slid ten feet to bottom.

Time Set Packer(s) 4:30 A.M. Time Started Off Bottom 8:30 A.M. Maximum Temperature 128°
Initial Hydrostatic Pressure 2340 P.S.I.
Initial Flow Period 60 Minutes (B) 86 P.S.I. to (C) 86 P.S.I.
Initial Closed In Period 57 Minutes (D) 186 P.S.I.
Final Flow Period 60 Minutes (E) 98 P.S.I. to (F) 98 P.S.I.
Final Closed In Period 54 Minutes (G) 136 P.S.I.
Final Hydrostatic Pressure 2286 P.S.I. (H)

WESTERN TESTING CO., INC.

Pressure Data

Date 10/11/81 Test Ticket No. 11902
 Recorder No. 1566 Capacity 4300 Location 4638 Ft.
 Clock No. -- Elevation 2012 Kelly Bushing Well Temperature 128 °F

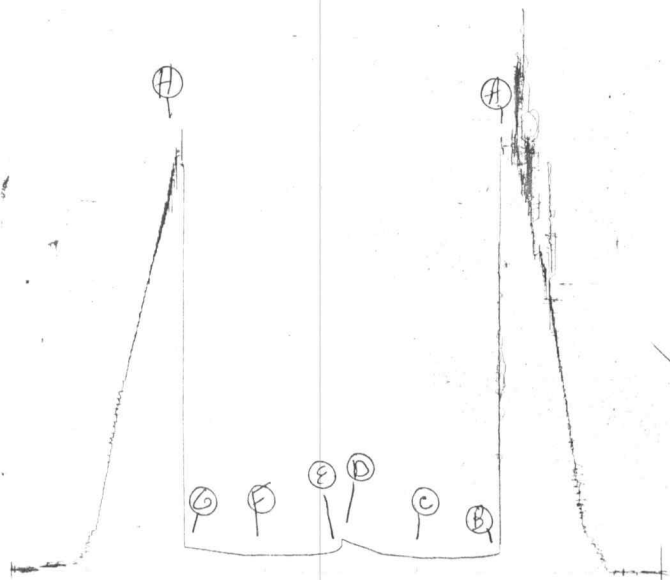
Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	2340	P.S.I.	4:30P	M
B First Initial Flow Pressure	86	P.S.I.	60	Mins.
C First Final Flow Pressure	86	P.S.I.	60	Mins.
D Initial Closed-in Pressure	186	P.S.I.	60	Mins.
E Second Initial Flow Pressure	98	P.S.I.	60	Mins.
F Second Final Flow Pressure	98	P.S.I.	60	Mins.
G Final Closed-in Pressure	136	P.S.I.		
H Final Hydrostatic Mud	2286	P.S.I.		

PRESSURE BREAKDOWN

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Breakdown: <u>12</u> Inc.		Breakdown: <u>19</u> Inc.		Breakdown: <u>12</u> Inc.		Breakdown: <u>18</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	86	0	86	0	98	0	98
P 2	86	3	91	5	98	3	98
P 3	86	6	92	10	98	6	98
P 4	86	9	94	15	98	9	98
P 5	86	12	96	20	98	12	98
P 6	86	15	98	25	98	15	100
P 7	86	18	100	30	98	18	104
P 8	86	21	102	35	98	21	106
P 9	86	24	104	40	98	24	110
P10	86	27	106	45	98	27	112
P11	86	30	113	50	98	30	114
P12	86	33	121	55	98	33	119
P13	86	36	130	60	98	36	121
P14		39	138			39	124
P15		42	145			42	127
P16		45	153			45	130
P17		48	162			48	132
P18		51	171			51	134
P19		54	180			54	136
P20		57	186				

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TKT #1902
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Time Set Packer(s)	7:45	<u>A.M.</u> <u>P.M.</u>	Time Started Off Bottom	10:45	<u>A.M.</u> <u>P.M.</u>	Maximum Temperature	128
Initial Hydrostatic Pressure	(A)	2375		P.S.I.			
Initial Flow Period	Minutes	30	(B)	69	P.S.I. to (C)	64	P.S.I.
Initial Closed In Period	Minutes	57	(D)	138	P.S.I.		
Final Flow Period	Minutes	30	(E)	81	P.S.I. to (F)	78	P.S.I.
Final Closed In Period	Minutes	57	(G)	83	P.S.I.		
Final Hydrostatic Pressure	(H)	2369		P.S.I.			

WESTERN TESTING CO., INC.

Pressure Data

Date 10/12/81 Recorder No. 1566 Capacity 4300 Test Ticket No. 11903
 Clock No. - Elevation 2012 Kelly Bushing Location 4663 Ft. 128 Well Temperature 128 °F

Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	<u>2375</u>	P.S.I.	<u>7:45A</u>	<u>M</u>
B First Initial Flow Pressure	<u>69</u>	P.S.I.	<u>30</u>	<u>30</u>
C First Final Flow Pressure	<u>64</u>	P.S.I.	<u>60</u>	<u>57</u>
D Initial Closed-in Pressure	<u>138</u>	P.S.I.	<u>30</u>	<u>30</u>
E Second Initial Flow Pressure	<u>81</u>	P.S.I.	<u>60</u>	<u>57</u>
F Second Final Flow Pressure	<u>78</u>	P.S.I.		
G Final Closed-in Pressure	<u>83</u>	P.S.I.		
H Final Hydrostatic Mud	<u>2369</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>19</u> Inc.		Breakdown: <u>6</u> Inc.		Breakdown: <u>19</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>69</u>	<u>0</u>	<u>64</u>	<u>0</u>	<u>81</u>	<u>0</u>	<u>78</u>
P 2 <u>5</u>	<u>69</u>	<u>3</u>	<u>64</u>	<u>5</u>	<u>81</u>	<u>3</u>	<u>78</u>
P 3 <u>10</u>	<u>69</u>	<u>6</u>	<u>65</u>	<u>10</u>	<u>81</u>	<u>6</u>	<u>78</u>
P 4 <u>15</u>	<u>68</u>	<u>9</u>	<u>68</u>	<u>15</u>	<u>81</u>	<u>9</u>	<u>78</u>
P 5 <u>20</u>	<u>67</u>	<u>12</u>	<u>72</u>	<u>20</u>	<u>80</u>	<u>12</u>	<u>78</u>
P 6 <u>25</u>	<u>65</u>	<u>15</u>	<u>74</u>	<u>25</u>	<u>79</u>	<u>15</u>	<u>78</u>
P 7 <u>30</u>	<u>64</u>	<u>18</u>	<u>78</u>	<u>30</u>	<u>78</u>	<u>18</u>	<u>78</u>
P 8 _____		<u>21</u>	<u>79</u>			<u>21</u>	<u>78</u>
P 9 _____		<u>24</u>	<u>83</u>			<u>24</u>	<u>78</u>
P10 _____		<u>27</u>	<u>87</u>			<u>27</u>	<u>78</u>
P11 _____		<u>30</u>	<u>92</u>			<u>30</u>	<u>78</u>
P12 _____		<u>33</u>	<u>97</u>			<u>33</u>	<u>78</u>
P13 _____		<u>36</u>	<u>104</u>			<u>36</u>	<u>78</u>
P14 _____		<u>39</u>	<u>108</u>			<u>39</u>	<u>78</u>
P15 _____		<u>42</u>	<u>110</u>			<u>42</u>	<u>78</u>
P16 _____		<u>45</u>	<u>115</u>			<u>45</u>	<u>78</u>
P17 _____		<u>48</u>	<u>119</u>			<u>48</u>	<u>79</u>
P18 _____		<u>51</u>	<u>126</u>			<u>51</u>	<u>80</u>
P19 _____		<u>54</u>	<u>132</u>			<u>54</u>	<u>82</u>
P20 _____		<u>57</u>	<u>138</u>			<u>57</u>	<u>83</u>

WESTERN TESTING CO., INC.

Pressure Data

Date 10-12 Recorder No. 1566 Capacity 4300 Test Ticket No. 11903
 Clock No. --- Elevation 2012 KB Location 4663 Ft
 Well Temperature 128 °F

Point	Pressure		Time Given	Time Computed
A Initial Hydrostatic Mud	<u>2375</u>	P.S.I.	<u>7:45 A</u>	<u>M</u>
B First Initial Flow Pressure	<u>69</u>	P.S.I.	<u>30</u>	<u>30</u> Mins.
C First Final Flow Pressure	<u>64</u>	P.S.I.	<u>60</u>	<u>57</u> Mins.
D Initial Closed-in Pressure	<u>138</u>	P.S.I.	<u>30</u>	<u>30</u> Mins.
E Second Initial Flow Pressure	<u>81</u>	P.S.I.	<u>60</u>	<u>57</u> Mins.
F Second Final Flow Pressure	<u>78</u>	P.S.I.		
G Final Closed-in Pressure	<u>83</u>	P.S.I.		
H Final Hydrostatic Mud	<u>2369</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>19</u> Inc.		Breakdown: <u>6</u> Inc.		Breakdown: <u>19</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 0	<u>69</u>	0	<u>64</u>	0	<u>81</u>	0	<u>78</u>
P 2 5	<u>69</u>	3	<u>64</u>	5	<u>81</u>	3	
P 3 10	<u>69</u>	6	<u>65</u>	10	<u>81</u>	6	
P 4 15	<u>68</u>	9	<u>68</u>	15	<u>81</u>	9	
P 5 20	<u>67</u>	12	<u>72</u>	20	<u>80</u>	12	
P 6 25	<u>65</u>	15	<u>74</u>	25	<u>79</u>	15	<u>78</u>
P 7 30	<u>64</u>	18	<u>78</u>	30	<u>78</u>	18	
P 8 35		21	<u>79</u>	35		21	
P 9 40		24	<u>83</u>	40		24	
P10 45		27	<u>87</u>	45		27	
P11 50		30	<u>92</u>	50		30	
P12 55		33	<u>97</u>	55		33	
P13 60		36	<u>104</u>	60		36	
P14		39	<u>108</u>	65		39	
P15		42	<u>110</u>	70		42	
P16		45	<u>115</u>	75		45	<u>78</u>
P17		48	<u>119</u>	80		48	<u>79</u>
P18		51	<u>126</u>	85		51	<u>80</u>
P19		54	<u>132</u>	90		54	<u>82</u>
P20		57	<u>138</u>			57	<u>83</u>
		60				60	

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