

INTERVAL SHEET

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VDMR Well No: 2126

Date rec'd:

Sample Interval: from 22'6" to: 196'7"

PROP: BLM A-051840

Number of samples: 68

Hole No.: T5-14A

COMP: Minerals Development Corp.

Total Depth: 196'7"

COUNTY: Giles

Oil or Gas: Water: Exploratory: X

From-To	From-To	From-To	From-To
22'6" - 25'5"	106'6" - 108'3"	177'5" - 180'1"	-
25'5" - 29'2" (2 spls)	108'3" - 112'6"	180'1" - 184'	-
29'2" - 29'11"	112'6" - 117'1"	184' - 185'8"	-
29'11" - 35' (2 spls)	117'1" - 122'6" (2 spls)	185'8" - 186'7"	-
35' - 39'6"	122'6" - 126'6"	186'7" - 189'4"	-
39'6" - 43'2"	126'6" - 127'6"	189'4" - 192'6"	-
43'2" - 44'10"	127'6" - 129'2"	192'6" - 194'9"	-
44'10" - 45'1"	129'2" - 132'6"	194'9" - 196'7"	-
45'1" - 46'7"	132'6" - 134'7"	-	-
46'7" - 48'5"	134'7" - 134'8"	-	-
48'5" - 48'10"	134'8" - 138'5"	-	-
48'10" - 49'3"	138'5" - 142'8"	-	-
49'3" - 49'11"	142'8" - 146'2"	-	-
49'11" - 51'3"	146'2" - 146'9"	-	-
51'3" - 55'6.5"	146'9" - 148'8"	-	-
55'6.5" - 56'4"	148'8" - 151'7"	-	-
56'4" - 60'7"	151'7" - 152'8"	-	-
60'7" - 62'8"	152'8" - 153'3"	-	-
62'8" - 66'7"	153'3" - 153'9"	-	-
66'7" - 69'	153'9" - 154'9"	-	-
69' - 70'4"	154'9" - 157'8"	-	-
70'4" - 76'6"	157'8" - 158'6"	-	-
76'6" - 82'3"	158'6" - 160'0"	-	-
82'3" - 82'6"	160' - 161'4"	-	-
82'6" - 86'6"	161'4" - 164'2"	-	-
86'6" - 88'3"	164'2" - 169'10" (2 spls)	-	-
88'3" - 91'6"	169'10" - 171'11"	-	-
91'6" - 97'3"	171'11" - 172'8"	-	-
97'3" - 101'2"	172'8" - 175'2"	-	-
101'2" - 106'6"	175'2" - 177'5"	-	-

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22'6" - 25'5"	106'6" - 108'3"	177'5" - 180'1"	-
25'5" - 29'2" (2 cpls)	108'3" - 112'6"	180'1" - 184'	-
29'2" - 29'11"	112'6" - 117'1"	184' - 185'8"	-
29'11" - 35' (2 cpls)	117'1" - 122'6" (2 cpls)	185'8" - 186'7"	-
35' - 39'6"	122'6" - 126'6"	186'7" - 189'4"	-
39'6" - 43'2"	126'6" - 127'6"	189'4" - 192'6"	-
43'2" - 44'10"	127'6" - 129'2"	192'6" - 194'9"	-
44'10" - 45'1"	129'2" - 132'6"	194'9" - 196'7"	-
45'1" - 46'7"	132'6" - 134'7"	-	-
46'7" - 48'5"	134'7" - 134'8"	-	-
48'5" - 48'10"	134'8" - 138'5"	-	-
48'10" - 49'3"	138'5" - 142'8"	-	-
49'3" - 49'11"	142'8" - 146'2"	-	-
49'11" - 51'3"	146'2" - 146'9"	-	-
51'3" - 55'6.5"	146'9" - 148'8"	-	-
55'6.5" - 56'4"	148'8" - 151'7"	-	-
56'4" - 60'7"	151'7" - 152'8"	-	-
60'7" - 62'8"	152'8" - 153'3"	-	-
62'8" - 66'7"	153'3" - 153'9"	-	-
66'7" - 69'	153'9" - 154'9"	-	-
69' - 70'4"	154'9" - 157'8"	-	-
70'4" - 76'6"	157'8" - 158'6"	-	-
76'6" - 82'3"	158'6" - 160'0"	-	-
82'3" - 82'6"	160' - 161'4"	-	-
82'6" - 86'6"	161'4" - 164'2"	-	-
86'6" - 88'3"	164'2" - 169'10" (2 cpls)	-	-
88'3" - 91'6"	169'10" - 171'11"	-	-
91'6" - 97'3"	171'11" - 172'8"	-	-
97'3" - 101'2"	172'8" - 175'2"	-	-
101'2" - 106'6"	175'2" - 177'5"	-	-

HOLE NUMBER: T5-14A

Lessee or permittee: E. L. Keesling Exp
Address: Bramwell, West Virginia
Driller: Vaughan Bowling Cunningham Core
Drilling Co.
Commenced drilling: September 28, 1961
Finished: October 18, 1961
Method of drilling: Diamond core
Logged by: W. A. Moon
State: Virginia

<u>Depth in feet</u>			<u>Description</u>
<u>From</u>	<u>To</u>	<u>Thickness</u>	
0	22'6"	22'6"	Overburden (Keefer sandstone)
22'6"	25'5"	2'11"	Sandstone, brown to grayish white, mottled, fine to medium grained; friable. Includes 1'6" core loss.
25'5"	29'2"	3'9"	Sandstone, gray to grayish white, fine to coarse grained, conglomeratic, flecked with maroon and rust brown splotches.
29'2"	29'11"	9"	Sandstone, fine grained, rust brown, crumbly.
29'11"	31'11"	2'0"	Sandstone, grayish white, fine to coarse grained contains reddish brown streaks and flecks. Quartzitic.
31'11"	35'	3'1"	Sandstone, white, fine to medium grained, quartzitic.
35'0"	35'3"	3"	Clay, gray.
35'3"	36'9"	1'6"	Sandstone, white, fine to medium grained, quartzitic.
36'9"	36'11"	2"	Clay, gray.
36'11"	38'0"	1'1"	Sandstone, white, fine grained; quartzitic.
38'0"	38'7"	0'7"	Clay gray. Includes 4" core loss.
38'7"	39'2"	0'7"	Sandstone, white, fine to medium grained.
39'2"	39'3"	0'1"	Clay, gray.
39'3"	41'11"	2'8"	Sandstone, white, fine grained, quartzite. Includes 7" core loss.
41'11"	42'11"	1'0"	Sandstone, white, coarse grained; quartzitic.
42'11"	43'7"	0'8"	Sandstone, white, fine grained, quartzitic.

Depth in feet			Description
From	To	Thickness	
43'7"	44'10"	1'3"	Sandstone, white to grayish white, fine grained, quartzitic.
44'10"	45'1"	3"	Sandstone, gray to grayish black, medium to coarse grained.
45'1"	46'7"	1'6"	Sandstone, gray to grayish black, friable .
46'7"	48'5"	1'10"	Sandstone, grayish black, fine grained, clayey.
48'5"	48'10"	0'5"	Clay, black, sandy.
48'10"	49'1"	0'3"	Clay, grayish maroon.
49'1"	49'2"	0'1"	Sandstone, white to gray, fine grained.
49'2"	49'3"	0'1"	Clay, maroon.
49'3"	49'6"	0'3"	Sandstone, grayish white, fine grained.
49'6"	49'11"	5"	Sandstone, white, fine grained, quartzitic.
49'11"	50'0"	1"	Sandstone, rust brown, fine grained.
50'0"	51'3"	1'3"	Sandstone, white to grayish red, fine grained; quartzitic. Includes 5" core loss.
51'3"	55'11"	4'8"	Sandstone, grayish white to pale grayish brown, fine to medium grained; quartzitic.
55'11"	56'4"	0'5"	Sandstone, gray to grayish brown, fine grained.
56'4"	60'7"	4'3"	Sandstone, grayish white to grayish pink, fine grained; quartzitic. Lower 2 inches fractured.
60'7"	62'4"	1'9"	Sandstone, pale gray to grayish pink, fine grained; quartzitic.
62'4"	63'5"	1'1"	Sandstone, gray, fine grained, quartzitic.
63'5"	65'6"	2'1"	Sandstone, gray, medium to coarse grained, quartzitic.
65'6"	66'2"	0'8"	Sandstone, gray, fine grained, quartzitic; contains
66'2"	66'7"	0'5"	Sandstone, grayish pink, fine grained, quartzitic.
66'7"	69'0"	2'5"	Shale, maroon and pale gray, unctuous. Includes 1'7" core loss.

Depth in feet			Description
From	To	Thickness	
69'0"	70'4"	1'4"	Sandstone, rust brown, fine grained.
70'4"	76'0"	5'8"	Sandstone, yellowish brown, fine to medium grained, friable; contains gray clay partings and seams, includes 5' core loss.
76'6"	82'3"	5'9"	Sandstone, pale grayish white, fine grained, contains pale green and maroon shale interbeds. (Core loss 4'11")
82'3"	82'6"	0'3"	Sandstone, brown, fine grained, shaly.
82'6"	86'6"	4'0"	Shale, light brown to pale green, weathered. (Core loss 2'11")
86'6"	88'3"	1'9"	Sandstone, brown to grayish green, fine to medium grained; shaly, fractured.
88'3"	91'6"	3'3"	Shale, rust brown to grayish green. (Includes 2'2" core loss)
91'6"	94'9"	3'3"	Shale, greenish gray; contains gray fine grained sandstone intercalations.
94'9"	97'3"	2'6"	Shale, greenish gray, contains rust brown, sandstone intercalations, fine to medium grained. (Includes 1' core loss)
97'3"	97'6"	0'3"	Clinton formation, sandstone, maroon, medium grained, slightly ferruginous.
97'6"	98'2"	0'8"	Sandstone, maroon, fine to medium grained contains rust brown shale interbeds.
98'2"	99'8"	1'6"	Sandstone, maroon, fine grained, slightly ferruginous.
99'8"	100'9"	1'1"	Sandstone, maroon, medium to coarse grained, ferruginous.
100'9"	106'3"	5'6"	Sandstone, maroon, fine grained, slightly ferruginous, contains abundant maroon shale partings.
106'3"	106'6"	0'3"	Sandstone, maroon, fine grained, ferruginous.
106'6"	108'3"	1'9"	Sandstone, maroon, coarse grained, highly ferruginous; contains scattered quartz granules.
108'3"	118'6"	10'3"	Sandstone, fine to medium grained, highly ferruginous.

<u>Depth in feet</u>			<u>Description</u>
<u>From</u>	<u>To</u>	<u>Thickness</u>	
118'6"	121'1"	2'7"	Sandstone, maroon, coarse grained, highly ferruginous.
121'1"	126'6"	5'5"	Sandstone, maroon, fine to medium grained, ferruginous.
126'6"	127'6"	1'0"	Sandstone, maroon, coarse grained, conglomeratic; contains quartz granules, highly ferruginous.
127'6"	129'2"	1'8"	Shale, pale brown to olive drab.
129'2"	134'7"	5'5"	Shale, pale grayish green, unctuous; contains a 2" bed of grayish fine grained sandstone at 131'.
134'7"	134'8"	0'1"	Sandstone, grayish green, fine grained.
134'8"	138'5"	3'9"	Shale, pale grayish green, unctuous; contains sporadic plant fossils.
138'5"	146'2"	7'9"	Shale, pale grayish green, unctuous; contains scattered intercalations of pale grayish green fine grained sandstone.
146'2"	146'9"	7"	Sandstone, pale grayish green, fine grained.
146'9"	147'1"	4"	Shale, grayish green.
147'1"	147'6"	5"	Sandstone, pale gray, fine grained.
147'6"	151'7"	4'1"	Shale, pale grayish green, unctuous.
151'7"	152'8"	1'1"	Sandstone, pale grayish maroon, fine grained. Includes 3" core loss.
152'8"	153'3"	0'7"	Sandstone, pale grayish maroon, fine grained; fossiliferous; contains brachiopods.
153'3"	153'9"	0'6"	Shale, pale grayish brown. (Includes 4" core loss)
153'9"	154'9"	1'0"	Sandstone, maroon, coarse grained, conglomeratic, ferruginous.
154'9"	157'8"	2'11"	Sandstone, maroon, fine grained, ferruginous, contains abundant maroon shale partings.
157'8"	158'6"	0'10"	Shale, drab brown, sandy.
158'6"	160'0"	1'6"	Shale, pale grayish green, sandy.

Depth in feet			Description
From	To	Thickness	
160'0"	160'2"	2"	Shale, olive drab.
160'2"	160'9"	7"	Sandstone, pale maroon, fine to coarse grained, slightly ferruginous.
160'9"	161'0"	3"	Shale, maroon.
161'0"	161'4"	4"	Sandstone, pale maroon, coarse grained, slightly ferruginous.
161'4"	162'10"	1'6"	Shale, pale grayish green; contains several intercalations of maroon sandstone.
162'10"	164'2"	1'4"	Shale, pale olive drab to rust brown.
164'2"	164'7"	5"	Sandstone, maroon, fine to medium grained, ferruginous; contains maroon clay galls.
164'7"	169'10"	5'3"	Sandstone, maroon, fine grained, ferruginous; contains abundant maroon shale partings parallel to the bedding planes.
169'10"	170'1"	0'3"	Shale, grayish green to maroon; contains gray sandstone intercalations.
170'1"	170'6"	0'5"	Sandstone, maroon, fine grained, ferruginous; contains maroon shale partings parallel to the bedding planes.
170'6"	170'10"	0'4"	Shale, grayish green.
170'10"	171'11"	1'1"	Sandstone, maroon, fine grained, ferruginous; contains abundant maroon shale partings.
171'11"	172'2"	0'3"	Shale, drab maroon.
172'2"	172'8"	0'6"	Sandstone, maroon, coarse grained, conglomeratic; ferruginous.
172'8"	172'8.5"	0'0.5"	Clay, gray.
172'8.5"	174'1"	1'4.5"	Sandstone, maroon, coarse grained; conglomeratic, highly ferruginous; contains quartz granules.
174'1"	174'7"	0'6"	Sandstone, maroon, coarse grained, ferruginous; contains maroon shale partings.
174'7"	175'2"	0'7"	Sandstone, maroon, coarse grained; highly ferruginous; contains quartz granules.

Depth in feet			Description
From	To	Thickness	
175'2"	175'9"	0'7"	Shale, grayish green; contains intercalations of maroon sandstone.
175'9"	177'1"	1'4"	Shale, grayish green, unctuous; includes 5" core loss.
177'1"	177'2"	0'1"	Sandstone, maroon, fine grained.
177'2"	177'5"	3"	Clay, gray.
177'5"	184'0"	6'7"	Shale, greenish gray; contains gray fine grained sandstone intercalations. Includes 5" core loss.
184'	184'6"	0'6"	Sandstone, pale gray, fine grained.
184'6"	184'11"	0'5"	Sandstone, pale grayish maroon, fine grained.
184'11"	185'8"	0'9"	Sandstone, pale grayish white, fine grained; contains gray shale partings.
185'8"	187'2"	1'6"	Sandstone, pale grayish maroon, fine grained.
187'2"	188'3"	1'1"	Sandstone, pale grayish maroon, fine to medium grained; contains pale green shale partings.
188'3"	188'9"	6"	Sandstone, pale gray to pale grayish green, fine grained; contains black shale partings.
188'9"	189'4"	0'7"	Sandstone, gray to grayish green, coarse grained; conglomeratic; contains shale partings.
189'4"	192'6"	3'2"	Shale, black; contains irregular gray fine grained sandstone intercalations.
192'6"	193'1"	0'7"	Sandstone, gray, coarse grained; contains black limestone pebbles and granules.
193'1"	194'9"	1'8"	Sandstone, gray, fine grained; flecked with black specks, possibly phosphatic fossil remains.
194'9"	196'7"	1'10"	Sandstone, pale greenish gray, fine grained; contains irregular pale green shale partings.

Bottom of hole

LOG OF SPLIT CORE

Date: Saturday, October 21, 1961
 Hole: T5-14A (Box 4 of 10)

Depth in feet			Description
From	To	Thickness	
97'6"	98'2"	8"	Sandstone and interbedded shale; sandstone rust brown; contains rust brown shale partings. Sample 1 (98'2" - 101'8")
98'2"	101'8"	3'6"	Sandstone, drab maroon, fine grained slightly ferruginous.
101'8"	106'7"	4'9"	Sandstone, drab grayish maroon, fine grained, contains gray shale partings.
106'7"	107'	0'5"	Sandstone, drab maroon, coarse grained, conglomeratic, contains rust brown clay galls.
107'	127'5"	20'5"	Sample 2 (107' - 127'5") Sandstone, maroon, fine grained, ferruginous, marked absence of maroon shale partings.
127'5"	151'9"	24'4"	Shale greenish gray and gray fine grained sandstone, check core log.
151'9"	153'3"	1'6"	Sandstone, grayish maroon, fine grained.
153'3"	153'9"	6"	Shale, pale grayish tan, includes 4" core loss.
153'9"	154'9"	1'0"	Sample 3 (153'9" - 157'7") Sandstone, maroon, coarse grained, ferruginous, conglomeratic, contains large quartz granules.
154'9"	157'7"	2'10"	Sandstone, maroon, fine grained, ferruginous; contains abundant maroon shale partings.
157'7"	164'2"	6'7"	Shale green and interbedded grayish green sandstone. See core log.
164'2"	165'7"	1'5"	Sample 4 (164'2" - 169'7") Sandstone, maroon, fine to medium grained, ferruginous.
165'7"	169'7"	2'0"	Sandstone, maroon, fine grained, ferruginous; contains abundant maroon shale partings.
169'7"	170'1"	6"	Shale, maroon to pale grayish green.
170'1"	171'0"	0'11"	Sandstone, gray to grayish maroon, fine grained.

<u>Depth in feet</u>			<u>Description</u>
<u>From</u>	<u>To</u>	<u>Thickness</u>	
171'	172'	1'0"	Sample 5 (171'0" - 175'3") Sandstone, maroon, fine grained, ferruginous; contains abundant maroon shale partings.
172'	172'2"	0'2"	Shale, pale brown.
172'2"	174'1"	3'11"	Sandstone, maroon, coarse grained, conglomeratic, highly ferruginous.
174'1"	174'7"	6"	Shale, drab maroon.
174'7"	175'3"	8"	Sandstone, maroon, coarse grained, conglomeratic, highly ferruginous.

End of Log