

County VERMILLION
T R
Sec
Other Survey

Quarry or Pit.....Core...X....Dim.....Other.....
 Name...Survey Drill Holes #77, #78, #79, #116.....
 Former Names

 Operator
 Former Operators

COAL AND INDUSTRIAL MINERALS SECTION
INDIANA GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
611 NORTH WALNUT GROVE
BLOOMINGTON, INDIANA 47401

MEMORANDUM REPORTS BY:	
Name	Date
1. Prodip Dutta	
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	REMARKS

Survey Drill Hole No. 77
 280' FNL x 265' FEL NE1/4NE1/4NW1/4 sec. 29, T. 17 N., R. 10 W.
 Vermillion County, Indiana
 Elevation 543 feet
 Drilling completed February 14, 1961

Described by Prodip Dutta

Core description

<u>Unit</u>	<u>Description</u>	<u>Depth (ft.)</u>	<u>Thickness (ft.)</u>	<u>Sample No.</u>
<u>Pennsylvanian</u>				
1.	Core not split.	22.1	17.4	None
2.	Shale, N2 (grayish black), laminated,	39.5	1.2	N79-873
3.	Shale, N4 (medium dark gray), laminated.	40.7	1.8	N79-874
4.	Shale, N2 (grayish black), laminated pyritous.	42.5	0.3	N79-875
5.	Shale, 10R6/2 (pale red), laminated sideritic throughout.	42.8	0.8	N79-876
6.	Sandstone, N8 (very light gray), fine grained, laminated with shale, carbonaceous.	43.6	0.2	N79-877
7.	Shale in shades of 5Y6/1 (light olive gray), and 10R4/2 (grayish red), sideritic throughout, sandy laminations and carbonaceous at places.	43.8	4.2	N79-878
8.	Sandstone, N7 (light gray), fine grained with fine laminations of carbonaceous particles and micas.	48.0	0.9	N79-879
9.	Shale, N6 (medium light gray), laminated, specks of carbonaceous matter present throughout.	48.9	0.7	N79-880
10.	Shale, N6 (medium light gray), laminated with sandy band and laminations, specks of carbona- ceous matter common, sideritic at places.	49.6	2.5	N79-881

11.	Sandstone, N8 (very light gray), fine grained, fine laminations of carbonaceous material, siderite nodules and bands at places.	52.1	2.7	N79-882
12.	Sandstone, N8 (very light gray), fine grained interlaminated with micaceous - carbonaceous shale, N3 (dark gray).	54.8	0.7	N79-883
13.	Sandstone, N8 (very light gray), fine grained.	55.5	1.3	N79-884
14.	Shale, N6 (medium light gray), laminated, sideritic at top.	56.8	0.9	N79-885
15.	Sandstone, N8 (very light gray), fine grained, sideritic at top, laminations and carbonaceous materials at places.	57.7	0.6	N79-886
16.	Geophysics Sect.	58.3	0.6	None
17.	Sandstone, N8 (very light gray), fine grained with carbonaceous shale and siderite laminations towards bottom.	58.9	2.1	N79-887
18.	Shale/siltstone, N6 (medium light gray), carbonaceous, sandy towards top.	61.0	0.8	N79-888
19.	Sandstone, N8 (very light gray), fine grained with carbonaceous shale laminations, sideritic.	61.8	0.4	N79-889
20.	Geophysics Sect.	62.2	1.4	None
21.	Sandstone, N8 (very light gray), with carbonaceous shale laminations, sideritic.	63.6	1.3	N79-890
22.	Shale, N7 (light gray), with sandy laminations.	64.9	0.5	N79-891
23.	Shale, 5Y4/1 (olive gray), slightly sideritic at places.	65.4	6.1	N79-892
24.	Shale, N2 (grayish black).	71.5	0.1	N79-893
25.	Clay, 5Y4/1 (olive gray), silty, loose.	71.6	2.2	N79-894

26.	Siltstone in shades of 10R4/2 (grayish red) and 5GY8/1 (light greenish gray), highly sideritic throughout.	73.8	1.4	N79-895
27.	Siltstone, 5Y8/1 (yellowish gray), shale and siderite nodules at places.	75.2	1.7	N79-896
28.	Thinly laminated sandstone, N8 (very light gray), fine grained, and shale, N7 (light gray), siderite globules concentrated at places.	76.9	1.8	N79-897
29.	Sandstone, N7 (light gray), fine grained, shale laminations common, concentration of siderite nodules at places.	78.7	5.0	N79-898
30.	Shale, N6 (medium light gray), with occasional siderite bands and nodules.	83.7	3.3	N79-899
31.	Shale, 10YR4/2 (dark yellowish brown), sandy and sideritic, carbonaceous particle on bedding planes.	87.0	1.9	N79-900
32.	Shale, 10YR4/2 (dark yellowish brown), sandy and sideritic and carbonaceous at places.	88.9	9.6	N79-901
33.	Shale in shades of 10YR4/2 (dark yellowish brown) and 10R4/2 (grayish red), sideritic throughout.	98.5	4.6	N79-902
34.	Shale in shades of N3 (dark gray) and 5YR4/4 (moderate brown), sideritic.	103.1	0.7	N79-903
35.	Siderite, 5YR5/6 (light brown).	103.8	0.2	N79-904
36.	Shale in shades of N3 (dark gray) and 5YR4/4 (moderate brown), sideritic and carbonaceous.	104.0	1.2	N79-905
37.	Shale, N2 (grayish black), coating of moss like materials.	105.2	0.3	N79-906
38.	Siderite, 10YR5/4 (moderate yellowish brown), carbonaceous siderite at bottom.	105.5	0.3	N79-907

39.	Shale, N3 (dark gray) with siderite, 10YR6/2 (pale yellowish brown), bands and occasional siderite nodule and pyrite.	105.8	4.1	N79-908
40.	Shale, N5 (medium gray).	109.9	0.9	N79-909
41.	Shale, N2 (grayish black), carbonaceous, pyritous.	110.8	0.5	N79-910
42.	Geophysics Sect.	111.3	0.6	None
43.	Shale, N1 (black), carbonaceous.	111.9	2.2	N79-911
44.	Core taken away by coal section.	114.1	1.4	None
45.	Core loss.	115.5	1.7	None
46.	Core not split.	117.2	12.8	None
47.	Siltstone, 5Y6/1 (light olive gray), specks of carbonaceous material and sulfide mineral present at places.	130.0	1.2	N79-912
48.	Sandstone mottled in shades white gray and brown, grain size extremely variable, from very fine to coarse, clay clasts.	131.2	1.8	N79-913
49.	Siltstone, 5Y6/1 (light olive gray), siderite globules throughout.	133.0	0.4	N79-914
50.	Siltstone, N8 (very light gray), with gray shale laminations.	133.4	0.4	N79-915
51.	Siltstone, 5Y4/1 (olive gray), with thin sandy laminations.	133.8	0.5	N79-916
52.	Siltstone, 5Y4/1 (olive gray), with thin sandy laminations and siderite nodules.	134.3	1.0	N79-917
53.	Siltstone, 5Y4/1 (olive gray), with sandy laminations with occasional siderite globules.	135.3	1.5	N79-918
54.	Sandstone, N8 (very light gray), fine grained with shaly and sideritic laminations.	136.8	0.5	N79-919
55.	Geophysics Sect.	137.3	1.0	None
56.	Sandstone, N8 (very light gray), laminated and sideritic throughout.	138.3	3.8	N79-920

57.	Shale, 5Y4/1 (olive gray).	142.1	1.3	N79-921
58.	Shale, 5Y4/1 (olive gray), with siderite bands, nodules, and scattered siderite globules.	143.4	6.1	N79-922
59.	Shale, 5Y4/1 (olive gray), with siderite bands, nodules, and scattered siderite globules.	149.5	2.6	N79-923
60.	Shale, N2 (grayish black), carbonaceous with vitrain bands.	152.1	0.5	N79-924
61.	Shale, N3 (dark gray), with carbonaceous materials.	152.6	0.7	N79-925
62.	Shale in shades of N2 (grayish black) and N3 (dark gray), sideritic and carbonaceous.	153.3	5.3	N79-926
63.	Shale, N2 (grayish black).	158.6	1.5	N79-927
64.	Shale, 5Y4/1 (olive gray), with broken shell fragments.	160.1	0.3	N79-928
65.	Shale, N2 (grayish black), carbonaceous, pyritous (?).	160.4	1.2	N79-929
66.	Geophysics Sect.	161.6	0.6	None
67.	Shale in shades of N2 (grayish black) and N3 (dark grey), carbonaceous, pyritous at places, coating of white secondary materials (organic?).	162.2	2.7	N79-930
68.	Shale, N3 (dark gray), carbonaceous.	164.9	0.3	N79-931
69.	Clay, N5 (medium gray - light greenish at places) occasional carbonaceous and sideritic material present.	165.2	2.3	N79-932
70.	Shale mottled in shades of N3 (dark gray), 5Y8/1 (yellowish gray), and 10R4/6 (moderate reddish brown), siderite nodules common, pyritous at places.	167.5	1.0	N79-933
71.	Shale, N3 (dark gray).	168.5	0.2	N79-934
72.	Shale, N3 (dark gray), carbonaceous	168.7	1.2	N79-935

73.	Shale, N7 (light gray), with siderite stringer and veinlets.	169.9	2.5	N79-936
74.	Shale, N4 (medium dark gray).	172.4	0.7	N79-937
75.	Shale, N3 (dark gray).	173.1	0.5	N79-938
76.	Shale, N7 (light gray), sandy	173.6	0.4	N79-939
77.	Shale, 5R4/2 (grayish red), siderite throughout.	174.0	7.8	N79-940
78.	Clay, N4 (medium dark gray), silty.	181.8	0.8	N79-941
79.	Clay, 5Y2/1 (olive black).	182.6	0.7	N79-942
80.	Clay, N7 (light gray), silty with occasional carbonaceous matter.	183.3	4.0	N79-943
81.	Shale, 5Y6/1 (light olive gray).	187.3	0.7	N79-944
82.	Siltstone mottled in shades of gray and reddish brown, siderite globules are concentrated throughout.	188.0	0.5	N79-945
83.	Shale, 5GY6/1 (greenish gray).	188.5	0.7	N79-946
84.	Shale, 5GY56/1 (greenish gray), siderite globules at places.	189.2	0.4	N79-947
85.	Shale, 5GY6/1 (greenish gray).	189.6	1.1	N79-948
86.	Shale, 5GY6/1 (greenish gray), siderite globules at places.	190.7	1.3	N79-949
87.	Shale, 5GY6/1 (greenish gray).	192.0	2.4	N79-950
88.	Shale, N5 (medium gray), sideritic throughout with siderite bands at places.	194.4	3.8	N79-951
89.	Siderite, 10R4/6 (moderate reddish brown).	198.2	0.1	N79-952
90.	Shale, N5 (medium gray), sideritic throughout with siderite bands at places.	198.3	8.2	N79-953
91.	Siderite, 10R4/6 (moderate reddish brown).	206.5	0.1	N79-954
92.	Shale, N5 (medium gray).	206.6	1.0	N79-955
93.	Shale, N4 (medium dark gray), siderite at places.	207.6	1.2	N79-956

94.	Geophysics Sect.	208.8	1.4	None
95.	Shale, N5 (medium gray), sideritic with bands and nodules of siderite at places, occasional yellow stains.	210.2	7.7	N79-957
96.	Shale, N5 (medium gray), sideritic carbonaceous, yellow and brown stains, plant fossils common.	217.9	1.2	N79-958
97.	Coal, N1 (black), calcite in cleats.	219.1	5.3	N79-959
98.	Siltstone, N7 (light gray), with carbonized rootlets.	224.4	1.2	N79-960
99.	Sandstone, N8 (very light gray), fine grained with carbonized rootlets.	225.6	1.8	N79-961
100.	Sandstone, N8 (very light gray), fine grained.	227.4	0.6	N79-962
101.	Geophysics Sect.	228.0	2.5	None
102.	Sandstone, N8 (very light gray), fine grained with siderite band and nodule.	230.5	1.2	N79-963
103.	Shale, 5GY6/1 (greenish gray), carbonized plant material.	231.7	0.2	N79-964
104.	Sandstone, N8 (very light gray), fine grained with shale clasts and bands.	231.9	1.0	N79-965
105.	Sandstone, 5YR8/1 (pinkish gray), medium to coarse grained, sideritic globules concentrated throughout.	232.9	3.1	N79-966
106.	Geophysics Sect.	236.0	0.7	None
107.	Sandstone, 5YR8/1 (pinkish gray), medium to coarse grained, siderite globules concentrated throughout.	236.7	10.3	N79-967
108.	Sandstone, 5YR8/1 (pinkish gray), medium to coarse grained, siderite globules concentrated throughout.	247.0	4.0	N79-968
109.	Geophysics Sect.	251.0	1.6	None

110.	Sandstone, N8 (very light gray), medium grained with shale and carbonaceous shale laminations.	252.6	0.9	N79-969
111.	Shale, N3 (dark gray), sandy at places.	253.5	0.9	N79-970
112.	Shale in shades of 5Y6/1 (light olive gray) and N3 (dark gray), with sandy patches.	254.4	0.7	N79-971
113.	Sandstone, 5YR8/1 (pinkish gray), medium grained, siderite globules concentrated throughout.	255.1	1.4	N79-972
114.	Siderite, 10R4/6 (moderate reddish brown).	256.5	0.1	N79-973
115.	Sandstone, 5YR8/1 (pinkish gray), medium grained, siderite globules, concentrated throughout.	256.6	0.2	N79-974
116.	Shale in shades of N3 (dark gray) and 5GY6/1 (greenish gray), with sandy laminations.	256.8	0.4	N79-975
117.	Sandstone, N8 (very light gray), and shale, N6 (medium light gray), interlaminated.	257.2	0.2	N79-976
118.	Sandstone, N8 (very light gray), fine grained with occasional shale laminations.	257.4	3.0	N79-977
119.	Sandstone, N8 (very light gray), fine grained with laminated shale, N3 (dark gray) in the proportion of 4:1, occasional siderite bands and nodules.	260.4	3.7	N79-978
120.	Sandstone mottled in shades of red, gray, white and brown, coarse grained, clay clasts and siderite globules and nodules are common.	264.1	0.3	N79-979
121.	Shale, N2 (grayish black), sandy towards top.	264.4	0.2	N79-980
122.	Sandstone, 10R5/4 (pale reddish brown), fine to medium grained with siderite globules and nodules, carbonaceous materials common.	264.6	0.6	N79-981

123.	Shale, N4 (medium dark gray- reddish tinge at places) sideritic.	265.2	0.3	N79-982
124.	Sandstone, N8 (very light gray), fine grained with shale laminations, carbonaceous particles at places, siderite globules towards bottom.	265.5	1.2	N79-983
125.	Sandstone mottled in shades of red, gray, white and brown, coarse grained, clay clasts and siderite globules and nodules are common.	266.7	0.5	N79-984
126.	Sandstone, N8 (very light gray), and 5YR8/1 (pinkish gray), medium grained, concentration of siderite globules throughout.	267.2	1.8	N79-985
127.	Sandstone, 10R4/2 (grayish red), medium grained, highly sideritic.	269.0	0.2	N79-986
128.	Sandstone in shades of 10R4/2 (grayish red) and 5Y6/1 (light olive gray), concentration of siderite globules throughout.	269.2	0.2	N79-987
129.	Sandstone, N8 (very light gray), fine grained, carbonaceous streaks and siderite globules at places.	269.4	2.2	N79-988
130.	Core taken away.	271.6	0.2	None
131.	Geophysics Sect.	271.8	0.8	None
132.	Sandstone, N8 (very light gray), fine grained with carbonaceous bands and streaks, concentration of siderite globules at places.	272.6	5.8	N79-989
133.	Core taken away.	278.4	0.2	None
134.	Sandstone, N8 (very light gray), fine grained with carbonaceous bands and streaks, siderite globules, nodules and bands at places.	278.6	7.9	N79-990
135.	Laminated sand, N8 (very light gray) and shale, N3 (dark gray), in proportion of 1:1, siderite bands and laminations common.	286.5	7.0	N79-991
136.	Geophysics Sect.	293.5	0.5	None

137.	Shale, 10YR2/2 (dusty yellowish brown), sideritic throughout, sand laminae common, specks of carbonaceous matter present.	294.0	4.4	N79-992
138.	Sandstone, N8 (very light gray), and sideritic shale, 10YR2/2 (dusty yellowish brown), with siderite bands and laminations common.	298.4	0.7	N79-993
139.	Shale in shades of N3 (dark gray) and 10YR2/2 (dusty yellowish brown), laminated with lenses of sandstone, N8 (very light gray), sideritic throughout, sand and shale in proportion of 2:3, specks of carbonaceous material on bedding plane.	299.1	3.0	N79-994
140.	Laminated sand, N8 (very light gray) and shale, N3 (dark gray), in proportion of 1:1, siderite bands and laminations common, carbonaceous specks on bedding.	302.1	3.0	N79-995
141.	Shale, 10YR2/2 (dusty yellowish brown), sideritic throughout, sand laminae common, specks of carbonaceous matter on bedding.	305.1	1.0	N79-996
142.	Laminated sand, N8 (very light gray) and shale, N3 (dark gray), in proportion of 1:1, siderite bands and laminations common, carbonaceous specks on bedding.	306.1	9.4	N79-997
143.	Sandstone, 5Y6/1 (light olive gray), medium grained with siderite globules, nodules and laminae.	315.5	0.5	N79-998
144.	Sandstone, N8 (very light gray), fine grained with siderite globules and nodules.	316.0	0.9	N79-999
145.	Shale, 5Y6/1 (light olive gray), siderite globules common, occasional specks of carbonaceous matter.	316.9	0.2	S79-1
146.	Clay, 5Y6/1 (light olive gray), carbonized plant remains.	317.1	1.6	S79-2
147.	Shale, N3 (dark gray), carbonaceous.	318.7	0.7	S79-3

148.	Coal, N1 (black).	319.4	0.5	S79-4
149.	Underclay, 5Y6/1 (light olive gray), carbonaceous at places, carbonized plant materials throughout.	319.9	2.3	S79-5
150.	Underclay, 5Y6/1 (light olive gray), carbonized plant materials throughout.	322.2	1.8	A81-434
151.	Sandstone, N9 (white), fine grained with shale bands and laminations, light yellowish stains at places.	324.0	3.0	A81-435
<u>St. Genevieve</u>				
152.	Siderite band and globules, 5YR3/4 (moderate brown), in a matrix of 5Y6/1 (light olive gray) clay.	327.0	0.7	A81-436
153.	Clay, 5Y6/1 (light olive gray) with siderite nodules; slickensided.	327.7	1.9	A81-437
154.	Shale, 5Y4/1 (olive gray) intermixed with N8 (very light gray), siltstone with occasional globules of siderite.	329.6	0.7	A81-438
155.	Shale, ferruginized, to siderite shale and sideritic bands, moderate brown, laminations of velvet shaly and silty materials.	330.3	5.6	A81-439
156.	Siderite, 10YR3/4 (dark reddish brown) to 10R4/6 (moderate reddish brown).	335.9	0.2	A81-440
157.	Siltstone, 5Y8/1 (yellowish gray), with siderite nodules.	336.1	1.8	A81-441
158.	Shale/siltstone, 5Y8/1 (yellowish gray), brecciated.	337.9	0.8	A81-442
159.	Carbonate, 10YR 8/2 (very pale orange), fine grained.	338.7	1.3	A81-443
160.	Carbonate, 5Y4/1 (olive gray) to 5Y2/1 (olive black), fine grained.	340.0	0.5	A81-444
161.	Carbonate, 5Y6/1 (light olive gray), fine grained, lithographic.	340.5	0.9	A81-445
162.	Carbonate, 5Y8/4 (grayish yellow), with intercalated shale at places.	341.4	1.2	A81-446

163.	Shale/siltstone, 5Y4/1 (olive gray), with NB (very light gray), sandy laminations, siderite nodules and stringers are present.	342.6	1.1	A81-447
164.	Carbonate, 5Y8/4 (grayish yellow), fine grained.	343.7	0.4	A81-448
165.	Sandstone, NB (very light gray), fine grained with shale laminations, siderite nodules and stringers, calcareous.	344.1	1.9	A81-449
166.	Shale, 5Y4/1 (olive gray), with bands of fine grained sandstone and carbonate.	346.0	0.7	A81-450
167.	Carbonate, 5Y8/4 (grayish yellow), fine grained.	346.7	0.5	A81-451

Survey Drill Hole No. 78
 450' NL x 580' FEL NE1/4SE1/4NW1/4 sec. 29, T. 17 N., R. 10 W.
 Vermillion County, Indiana
 Elevation 582 feet
 Drilling completed February 24, 1961

Described by Prodip Dutta

Core description

<u>Unit</u>	<u>Description</u>	<u>Depth (ft.)</u>	<u>Thickness (ft.)</u>	<u>Sample No.</u>
<u>Pennsylvanian</u>				
1.	Core not split.	17.0	22.0	None
2.	Core not split.	39.0	11.0	None
3.	Shale, N4 (medium dark gray), highly fossiliferous (marine), calcareous.	50.0	0.7	N79-197
4.	Siderite rich shale, 5R4/2 (grayish red).	50.7	1.8	N79-198
5.	Shale, N4 (medium dark gray), highly fossiliferous (marine), calcareous.	52.5	0.7	N79-199
6.	Siderite rich shale, 5R4/2 (grayish red to very dusty red (10R2/2)).	53.2	0.8	N79-200
7.	Shale in shades of 5YR2/2 (dusty brown) and 10YR7/4 (grayish orange), fossiliferous, calcareous and sideritic.	54.0	1.0	N79-201
8.	Siderite rich shale, 5YR3/2 (grayish brown).	55.0	0.8	N79-202
9.	Clay, N6 (medium light gray).	55.8	0.6	N79-203
10.	Siderite, 10YR6/4 (light brown).	56.4	0.2	N79-204
11.	Shale, N4 (medium dark gray), sideritic.	56.6	2.1	N79-205
12.	Siderite, 5YR5/6 (light brown).	58.7	0.3	N79-206
13.	Shale, N4 (medium dark gray).	59.0	0.1	N79-207
14.	Siderite, 5YR5/6 (light brown).	59.1	0.2	N79-208
15.	Shale, N4 (medium dark gray), sandy.	59.3	2.1	N79-209

16.	Siderite, 5YR4/4 (moderate brown).	61.4	0.1	N79-210
17.	Shale and siltstone in shades of N4 (medium dark gray) and 5YR4/4 (moderate brown) with siderite nodules, bands, and calcareous lenses.	61.5	13.0	N79-211
18.	Core loss.	74.5	5.5	None
19.	Siltstone in shades of N4 (medium dark gray) and 5YR4/4 (moderate brown) sideritic, fossiliferous, calcareous.	80.0	1.2	N79-212
20.	Shale, N4 (medium dark gray).	81.2	1.4	N79-213
21.	Shale, N2 (grayish black).	82.6	1.9	N79-214
22.	Shale, N4 (medium dark gray).	84.5	2.6	N79-215
23.	Geophysics Sect.	87.1	0.4	None
24.	Shale, N4 (medium dark gray), with siderite and coaly stringer at top.	87.5	1.0	N79-216
25.	Sideritic shale in various shades of gray, white, and red, carbonaceous material along bedding.	88.5	3.9	N79-217
26.	Shale, N7 (light gray), sideritic, carbonaceous and sandy at places.	92.4	4.1	N79-218
27.	Siltstone in shades of N4 (medium dark gray) and 5YR4/4 (moderate brown), sideritic at top.	96.5	0.2	N79-219
28.	Sandstone, N8 (very light gray), fine grained, siderite globules concentrated along bedding at places.	96.7	1.7	N79-220
29.	Geophysics Sect.	98.4	2.4	None
30.	Sandstone, N8 (very light gray), fine grained.	100.8	0.1	N79-221
31.	Geophysics Sect.	100.9	0.8	None
32.	Siderite, 5YR4/4 (moderate brown).	101.7	0.2	N79-222
33.	Sandstone, N8 (very light gray), fine grained, sideritic and carbonaceous laminae present.	101.9	2.3	N79-223

34.	Shale, N6 (medium light gray), micaceous, sideritic at top.	104.2	1.3	N79-224
35.	Sandstone, 5YR8/1 (pinkish gray), fine grained, sideritic and carbonaceous laminae.	105.5	0.2	N79-225
36.	Geophysics Sect.	105.7	2.5	None
37.	Shale, N6 (medium light gray), sandy.	108.2	1.2	N79-226
38.	Sandstone, 5Y8/1 (yellowish gray), fine grained, sideritic and carbonaceous shale laminae all throughout.	109.4	2.1	N79-227
39.	Shale, N6 (medium light gray), sandy.	111.5	0.3	N79-228
40.	Sandstone in shades of N8 (very light gray) and N5 (medium gray), fine grained, micaceous, carbonaceous particles.	111.8	0.4	N79-229
41.	Geophysics Sect.	112.2	0.7	None
42.	Shale, N6 (medium light gray), black plant fragments.	112.9	8.5	N79-230
43.	Shale, N1 (black), with siderite bands.	121.4	0.2	N79-231
44.	Shale, N3 (dark gray).	121.6	0.5	N79-232
45.	Siltstone, 5Y8/1 (yellowish gray), siderite globules concentrated at places.	122.1	2.2	N79-233
46.	Sandstone, N9 (white), fine grained alternate with siltstone/shale, 5GY6/1 (greenish gray), concentration of siderite globules at places.	124.3	3.8	N79-234
47.	Shale, 5GY6/1 (greenish gray), silty and sideritic at places.	128.1	4.7	N79-235
48.	Sideritic sandstone, 10R8/2 (grayish orange pink).	132.8	0.5	N79-236
49.	Shale, 5Y4/1 (olive gray), silty and sideritic at places.	133.3	1.6	N79-237

50.	Siderite in shades of 5YR3/2 (grayish brown) and 5YR5/2 (pale brown).	134.9	0.2	N79-238
51.	Shale, N5 (medium gray), with occasional siderite band or zone.	135.1	1.1	N79-239
52.	Geophysics Sect.	136.2	0.9	None
53.	Shale, 5Y4/1 (olive gray), sandy at places.	137.1	1.5	N79-240
54.	Geophysics Sect.	138.6	1.6	None
55.	Shaly siderite, 5YR3/2 (grayish brown).	140.2	7.5	N79-241
56.	Shaly siderite in shades of 10YR2/2 (dusty yellowish brown) and 5YR5/2 (pale brown).	147.7	3.3	N79-242
57.	Siderite, 10YR5/4 (moderate yellowish brown), fossiliferous, pyrite mineralization (?) along the contact of fossil and siderite.	151.0	0.3	N79-243
58.	Shaly siderite in shades of 10YR2/2 (dusty yellowish brown) and 5YR5/2 (pale brown), calcareous and fossiliferous.	151.3	0.2	N79-244
59.	Shaly siderite in shades of 10YR2/2 (dusty yellowish brown) and 5YR5/2 (pale brown).	151.5	1.2	N79-245
60.	Shale, N1 (black).	152.7	0.4	N79-246
61.	Siderite, 5YR5/6 (light brown).	153.1	0.3	N79-247
62.	Sideritic shale in shades of 10YR2/2 (duty yellowish brown) and 5YR5/2 (pale brown), fossiliferous, calcareous.	153.4	4.5	N79-248

Survey Drill Hole No. 79
 32' FNL x 65' FEL NE1/4NW1/4NE1/4 sec. 27, T. 16 N., R. 10 W.
 Vermillion County, Indiana
 Elevation 630 feet
 Drilling completed March 28, 1961

Described by Prodip Dutta

Core description

<u>Unit</u>	<u>Description</u>	<u>Depth (ft.)</u>	<u>Thickness (ft.)</u>	<u>Sample No.</u>
<u>Pennsylvanian</u>				
1.	Core not split.	130.0	29.5	None
2.	Sandstone, yellowish gray (5Y8/1), very fine grained, contains bands and laminae of dark gray shale.	159.5	1.9	A80-855
3.	Shale, medium dark gray (N4), with sandy laminae; specks of carbona- ceous materials scattered through- out.	161.4	0.3	A80-856
4.	Sandstone, yellowish gray (5Y8/1), with minor shale laminae.	161.7	1.3	A80-857
5.	Shale, medium dark gray (N4), inter- bedded and interlaminated with sandstone, very light gray (N8), fine grained.	163.0	0.4	A80-858
6.	Sandstone, very light gray (N8), fine grained with wavy laminations.	163.4	2.9	A80-859
7.	Sandstone, very light gray (N8), fine grained and dark gray (N3), shale laminated in the proportion 3:2.	166.3	0.6	A80-860
8.	Shale, dark yellowish brown (5GY6/2), sandy laminations, contorted at places; carbonaceous specks throughout; sideritic.	166.9	1.4	A80-861
9.	Clay, greenish gray (5GY6/1), carbonized rootlets.	168.3	0.6	A80-862

10.	Siltstone, light gray, laminated and bedded with sandstone, very light gray, fine grained in the proportion 3:1, carbonized rootlets and sideritic at places.	168.9	4.3	A80-863
11.	Shale, dark yellowish gray, with carbonaceous specks throughout, specks of carbonaceous material throughout.	173.2	1.6	A80-864
12.	Siltstone, light gray (N7), laminated and bedded with sandstone, very light gray, fine grained; oxidized patches around nodules.	174.8	2.4	A80-865
13.	Siltstone/shale, medium light gray with occasional sandy laminations and oxidized patches around nodules.	177.2	8.3	A80-866
14.	Clay, light olive gray (5Y8/1), with carbonized plant material, calcareous.	185.5	0.8	A80-867
15.	Siltstone mottled in shades of light gray (N7) and grayish red (5R4/2), with carbonized plant material.	186.3	0.3	A80-868
16.	Carbonate mottled in shades of grayish yellow (5Y8/4), greenish gray (5GY6/1), and dusty red (5R3/4), argillaceous.	186.6	2.1	A80-869
17.	Mudstone, greenish gray (5GY6/1), with reddish stringer of siderite (?); calcareous.	188.7	0.4	A80-870
18.	Siltstone, greenish gray (5GY6/1), sandy, sideritic, and lightly calcareous.	189.1	1.3	A80-871
19.	Sandstone, very light gray (N8), fine grained with siderite bands and nodules; calcareous.	190.4	3.5	A80-872
20.	Sandstone, very light gray (N8), laminated with greenish gray (5GY6/1), grades downwards to shale; sandy part calcareous.	193.9	0.7	A80-873
21.	Shale, greenish gray (5GY6/1), sideritic at places, sandy towards bottom.	194.6	3.1	A80-874

22.	Sandstone in shades varying between very light gray (N8) and light gray (N7), sideritic with shale laminae at middle; calcareous.	197.7	2.1	A80-875
23.	Laminated shale, greenish gray (5GY6/1) and sandstone, very light gray (N8), in the proportion of 1:1.	199.8	1.3	A80-876
24.	Siltstone/shale in shades of greenish gray (5GY6/1) and dark greenish gray (5GY4/1), specks of carbonaceous material.	201.1	1.5	A80-877
25.	Shale, dark yellowish brown (10YR4/2), with carbonized plant remains throughout; sideritic at places.	202.6	10.2	A80-878
26.	Shale in shades of dusty brown (5YR2/2) to moderate brown (5YR4/4), highly sideritic.	212.8	1.4	A80-879
27.	Carbonate, grayish black (N2), argillaceous, fossiliferous.	214.2	0.2	A80-880
28.	Shale, dark gray (N3), plant fossil impression.	214.4	0.8	A80-881
29.	Siderite, moderate yellowish brown (10YR5/4).	215.2	0.3	A80-882
30.	Shale, black (N1).	215.5	0.8	A80-883
31.	Shale, dark yellowish brown, carbonaceous and sandy at places.	216.3	9.1	A80-884
32.	Core not split.	225.4	19.1	None
33.	Sandstone, pinkish gray (5YR8/1), fine grained, bedded and inter-laminated with dark yellowish brown (10YR5/4), shale.	244.5	3.2	A80-885
34.	Siltstone, pale yellowish brown (10YR6/2) interbedded with dark yellowish brown (10YR4/2) shale, carbonaceous particles at places.	247.7	2.6	A80-886
35.	Sandstone, pinkish gray (5YR8/1), with carbonaceous shale laminations.	250.3	0.7	A80-887
36.	Shale/siltstone in shades of pale	251.0	1.8	A80-888

yellowish brown (10YR6/2) and dark yellowish brown (10YR4/2), carbonized plant fossil and specks of carbonaceous particles on bedding plane.

37.	Sandstone, pinkish gray (5YR8/1), with specks of carbonaceous particles throughout.	252.8	0.9	A80-889
38.	Shale, dark yellowish brown (10YR4/2), with carbonized plant fossil and specks of carbonaceous material.	253.7	2.6	A80-890
39.	Sandstone, pinkish gray (5YR8/1), interbedded and interlaminated with dark yellowish brown (10YR4/2), carbonaceous shale.	256.3	1.7	A80-891
40.	Sandstone, very light gray (N8), fine grained with pale yellowish brown (10YR6/2), clay clasts and specks of carbonaceous material.	258.0	0.7	A80-892
41.	Sandstone, yellowish gray (5Y8/1), fine grained, sideritic throughout; clay clasts and carbonaceous specks at places.	258.7	1.8	A80-893
42.	Shale, black (N1), carbonaceous with gray sandy patches.	260.5	0.5	A80-894
43.	Siltstone/shale, light greenish gray (5GY8/1), sideritic at middle, yellow and dark yellow stains at places.	261.0	3.3	A80-895
44.	Core not split.	264.3	15.7	None
45.	Core not split.	280.0	10.0	None
46.	Core not split.	290.0	18.0	None
47.	Core not split.	308.0	7.1	None
48.	Shale/siltstone, medium dark gray (N4), with carbonized rootlets towards top, siderite nodules throughout and sandy and laminated towards bottom.	315.1	4.1	A80-896
49.	Shale/siltstone, dark yellowish brown, laminated with sandy laminae, sideritic throughout.	319.2	4.8	A80-897

50.	Siltstone/shale in shades of dark yellowish brown (10YR4/2) and moderate yellowish brown (10YR5/4), sideritic throughout.	324.0	3.2	A80-898
51.	Shale, greenish gray (5GY6/1), sideritic throughout, occasional shale, greenish gray (5GY6/1).	327.2	3.7	A80-899
52.	Shale, greenish gray (5GY6/1).	330.9	2.2	A80-900
53.	Carbonate, grayish red (5R4.2), fine grained.	333.1	0.7	A80-901
54.	Carbonate, light gray (N7), fine grained; fossiliferous, occasional specks of sulfide minerals.	333.8	2.0	A80-902
55.	Carbonate, medium light gray (N6) to light gray (N7), fine grained argillaceous and fossiliferous.	335.8	1.3	A80-903
56.	Shale (core missing).	337.1	0.1	None
57.	Coal (core not split).	337.2	3.6	None
58.	Uncerclay in shades of olive gray (5Y4/1) and light olive gray (5Y6/1), lighter shades towards bottom; carbonized plant and rootlets.	340.8	3.0	A80-904
59.	Siltstone, greenish gray (5GY6/1), laminated with sandy laminae, yellow stains at places.	343.8	2.6	A80-905
60.	Sandstone, very light gray (N8), fine grained, interbedded and interlaminated with greenish gray (5GY6/1) in the proportion of 3:1.	346.4	3.0	A80-906
61.	Sandstone, very light gray (N8), medium to coarse grained, slightly calcareous.	349.4	2.4	A80-907
62.	Siltstone, yellowish gray (5Y8/1) with greenish gray (5GY6/1), shale laminations.	351.8	0.3	A80-908
63.	Sandstone, very light gray (N8), medium to coarse grained, slight yellow stains at places, highly calcareous.	352.1	7.9	A80-909

64.	Core removed.	360.0	2.5	None
65.	Sandstone, very light gray, (N8), fine to coarse grained, siderite bands and globules at places, occasional yellow stains, calcar- eous.	362.5	19.8	A80-910
66.	Sandstone mottled in shades of very light gray (N8) and light brown (5YR5/6), medium grained, calcar- eous.	382.3	0.7	A80-911
67.	Sandstone, very light gray (N8), medium grained, carbonaceous concentration of siderite globules scattered throughout.	383.0	6.4	A80-912
68.	Sandstone, very light gray (N8), fine to medium grained, occasional concentration of siderite globules, calcareous.	389.4	7.1	A80-913
69.	Sandstone, pinkish gray (5YR8/1), medium to coarse grained, clay clasts at the top; concentration of siderite globules throughout, calcareous.	396.5	6.0	A80-914
70.	Sandstone, pinkish gray (5YR8/1), medium to coarse grained, high concentration of siderite globules throughout with specks of carbona- ceous matter scattered all through.	402.5	13.8	A80-915
71.	Sandstone, very light gray (N8), medium to coarse grained, siderite globules scattered throughout, rare calcareous nodules and carbona- ceous particles, calcareous.	416.3	1.8	A80-916
72.	Laminated sandstone, pinkish gray (5YR8/1), fine grained, and shale, light brownish gray (5YR6/1) in the proportion of 2:1, sideritic, carbonaceous, laminated.	418.1	6.5	A80-917
73.	Shale, medium dark gray (N4), car- bonaceous, laminated with sandy laminae, siderite nodules at top.	424.6	0.8	A80-918
74.	Sandstone, very light gray, (N8), fine grained, with dark gray to pale yellowish brown shale bands.	425.4	1.7	A80-919

75.	Shale, medium dark gray (N4), carbonaceous, laminated with sandy laminae, very light gray.	427.1	2.4	A80-920
76.	Sandstone in shades of very light gray (N8), and grayish yellow (5Y8/4), siderite nodules and clay clasts common, occasional shale band, calcareous towards top.	429.5	2.9	A80-921
77.	Sandstone, moderate brown (5YR4/4), fine to medium grained, high concentration of siderite globules throughout with occasional siderite nodules, calcareous.	432.4	6.6	A80-922
78.	Siderite, moderate brown (5YR4/4).	439.0	0.6	A80-923
79.	Sandstone in shade of moderate brown (5YR4/4), medium grained, high concentration of siderite globules throughout with occasional siderite nodule; calcareous.	439.6	5.1	A80-924
80.	Sandstone, very light gray (N8), medium grained with occasional siderite globule and nodule, calcareous.	444.7	1.3	A80-925
81.	Sandstone in shades of moderate brown (5YR4/4), medium to coarse grained, high concentration of siderite globules throughout with occasional siderite nodules; calcareous.	446.0	7.8	A80-926
82.	Siderite, light brown (5YR5/6), sandy, calcareous.	453.8	0.3	A80-927
83.	Sandstone in shades of moderate brown (5YR5/6), medium to coarse grained, high concentration of siderite globules throughout, calcareous.	454.1	3.4	A80-928
84.	Siderite, dark yellowish brown (10YR4/2), with a thin sandy lense.	457.5	0.8	A80-929
85.	Sandstone, very light gray (N8), medium grained with pebble sized shale clasts and siderite nodules.	458.3	1.4	A80-930

86.	Shale, medium dark gray (N4), with a siderite band.	459.7	0.5	A80-931
87.	Sandstone, very light gray (N8), medium grained with occasional siderite nodules.	460.2	0.5	A80-932
88.	Siderite, pale brown (5YR5/2).	460.7	0.1	A80-933
89.	Core loss.	460.8	2.0	None
90.	Sandstone, very light gray, (N8), medium grained with occasional siderite nodule, calcareous.	462.8	2.5	A80-934
91.	Sandstone, very light gray (N8), medium grained, concentration of siderite globules throughout, red and brown color at places are due to siderite, yellow stain at the center, calcareous.	465.3	3.1	A80-935
92.	Sandstone, very light gray (N8), medium to coarse grained, with siderite bands and nodules, calcareous.	468.4	6.0	A80-936
93.	Siderite, moderate brown (5YR4/4).	474.4	0.2	A80-937
94.	Sandstone, very light gray (N8), coarse to medium grained with occasional siderite nodules, calcareous.	474.6	7.1	A80-938
95.	Shale, medium gray, with sand lense.	481.7	0.3	A80-939
96.	Sandstone, very light gray (N8), with shale clasts and bands along with siderite nodules and bands scattered throughout, calcareous.	482.0	4.8	A80-940
97.	Siderite, moderate yellowish brown (10YR5/4).	486.8	0.3	A80-941
98.	Clay, very light gray (N8), with dark yellow stains.	487.1	0.5	A80-942
99.	Sandstone, very light gray (N8), medium grained, shale clasts, siderite nodules and bands scattered throughout, calcareous.	487.6	10.1	A80-943
100.	Coal, black (N1), with pyrite lense at top, calcite in clasts through-	497.7	0.8	A80-944

out.

101.	Underclay, olive black (5Y2/1), with carbonaceous stringers and carbonized rootlets, carbonaceous at top and at bottom.	498.5	2.1	A80-945
102.	Coal, black (N1).	500.6	0.2	A80-946
103.	Shale, black (N1), carbonaceous with coal stringer.	500.8	0.3	A80-947
104.	Siltstone/shale, medium dark gray (N4), carbonaceous.	501.1	0.6	A80-948
105.	Siltstone, light gray (N7), sandy at places.	501.7	2.0	A80-949
106.	Sandstone, very light gray (N8), very fine grained.	503.7	13.3	A80-950

Survey Drill Hole #116
 30' FNL X 20' FEL NE¼ NE¼ NE¼ Sec. 16, T. 15 N., R. 10 W.
 Vermillion County
 Elevation 615 feet
 Drilling completed April 24, 1964
 Described by Prodip Dutta

Unit	Description	Depth	Thick- ness	Sample
	Pennsylvanian			
1	Sandstone N8 (very light gray) fine grained with thin shale laminations siderite at places.	60.0	1.9	S79-0255
2	Siltstone N7 (light gray)	61.9	0.3	S79-0256
3	Sandstone N8 (very light gray) fine grained interbedded with siltstone N7 (light gray) in the ratio of 3:1.	62.2	0.9	S79-0257
4	Sandstone N8 (very light gray) fine grained, well sorted.	63.1	0.6	S79-0258
5	Sandstone N8 (very light gray) fine grained and siltstone N7 (light gray) interlaminated in the proportion of 1:1, sideritic at places.	63.7	1.1	S79-0259
6	Sandstone N8 (very light gray) fine grained with thin shale laminations at places.	64.8	1.8	S79-0260
7	Sandstone N8 (very light gray) fine grained with occasional siderite bands.	66.6	5.4	S79-0261
8	Siltstone N7 (light gray) sandy and sideritic at places.	72.0	0.6	S79-0262
9	Sandstone N8 (very light grey) fine grained.	72.6	1.4	S79-0263
10	Sandstone 10YR7/4 (grayish orange) fine grained and siltstone 5GY8/1 (light greenish gray)	74.0	0.5	S79-0264
11	Geophysics Section.	74.5	0.9	None
12	Sandstone N8 (very light gray) fine grained, occasional siderite globules at places.	75.4	2.2	S79-0265
13	Geophysics Section.	77.6	0.7	None
14.1	Sandstone N8 (very light gray) fine grained, sideritic towards top.	78.3	1.7	S79-0266
14.2	Sandstone N8 (very light gray) fine grained, sideritic towards top.	80.0	0.8	S79-0267
15	Shale 5GY5/1 (light greenish gray) laminated, siderite globule concentration at places.	80.8	5.3	S79-0268
16	Siltstone/shale N7 (light gray) sideritic at places.	86.1	4.0	S79-0269
17	Siderite 5YR5/6 (light brown).	90.1	0.2	S79-0270
18	Shale N6 (medium light gray) laminated with sandy stringers.	90.3	1.0	S79-0271
19	Shale N6 (medium light gray)	91.3	1.9	S79-0272
20	Shale N6 (medium light gray) laminated with sandy stringers.	93.2	6.8	S79-0273

21	Shale N5 (medium gray) with occasional sandy laminations, sideritic at places.	100.0	18.0	S79-0274
22	Sideritic 5YR5/6 (light brown).	118.0	0.2	S79-0275
23	Shale N6 (medium light gray) sideritic at places.	118.2	1.1	S79-0276
24	Siderite 5YR5/6 (light brown).	119.3	0.3	S79-0277
25	Shale N6 (medium light gray).	119.6	0.4	S79-0278
26	Shale N6 (medium light gray).	120.0	1.0	S79-0279
27	Siderite 5YR5/6 (light brown).	121.0	0.6	S79-0280
28	Shale N6 (medium light gray) rarely sideritic.	121.6	7.0	S79-0281
29	Siderite 5YR3/2 (grayish brown).	128.6	0.2	S79-0282
30	Shale N6 (medium light gray).	128.8	3.7	S79-0283
31	Shale in shades of 5YR2/1 (brownish black) and N5 (medium gray) rarely sideritic.	132.5	3.5	S79-0284
32	Shale N2 (grayish black) carbonaceous.	136.0	0.2	S79-0285
33	Shale N5 (medium gray).	136.2	1.8	S79-0286
34	Underclay N7 (light gray).	136.8	1.8	S79-0287
35	Sideritic claystone mottled in shades of brown and yellow.	138.6	1.4	S79-0288
36	Core loss 19'. Sample not representative.	140.0	20.0	S79-0289
37	Shale N7 (light gray).	160.0	6.5	S79-0290
38	Siderite 10YR6/6 (dark yellowish orange).	166.5	0.1	S79-0291
39	Shale N7 (light gray) with specks of sulfide mineral (pyrite) at places.	166.6	4.4	S79-0292
40	Shale N7 (light gray).	171.0	4.3	S79-0293
41	Siderite 10YR5/4 (moderate yellowish brown).	175.3	0.2	S79-0294
42	Shale N4 (medium dark gray), sideritic at places.	175.5	5.2	S79-0295
43	Geophysics Section.	180.7	0.9	None
44	Shale N4 (medium dark gray).	181.6	8.4	S79-0296
45	Siltstone 10YR4/2 (dark yellowish brown) specks of carbonaceous material throughout.	190.0	5.9	S79-0297
46	Shale 10YR4/2 (dark yellowish brown) sideritic (?)	195.9	9.1	S79-0298
47	Siltstone 10YR4/2 (dark yellowish brown), sideritic at places.	205.0	15.0	S79-0299
48	Shale 10YR4/2 (dark yellowish brown with patches of light brown) sideritic throughout.	220.0	6.9	S79-0300
49	Siderite 10YR5/4 (moderate yellowish brown).	226.9	0.1	S79-0301
50	Shale 10YR4/2 (dark yellowish brown), sideritic throughout with siderite bands.	227.0	4.8	S79-0302

51	Siderite 10YR5/4 (moderate yellowish brown).	231.8	0.1	S79-0303
52	Shale 10YR4/2 (dark yellowish brown) with light yellow siderite bands.	231.9	0.7	S79-0304
53	Shale N3 (dark gray) fossiliferous, sulfide minerals at places.	232.6	0.4	S79-0305
54	Geophysics Section.	233.0	0.5	None
55	Shale N3 (dark gray) carbonaceous towards bottom.	233.5	2.1	S79-0306
56	Coal N1 (black).	235.6	1.0	S79-0307
57	Shale N4 (medium dark gray) with carbonaceous and coaly bands.	236.6	0.6	S79-0308
58	Shale/siltstone N4 (medium dark gray) with light colored sandy laminae.	237.2	1.4	S79-0309
59	Sandstone N8 (very light gray) with light gray shale bands and laminations.	238.6	1.4	S79-0310
60	Alternate shaly and sandy lamination in shades of N5 (medium gray) and N8 (very light gray) with carbonaceous particles throughout	240.0	2.8	S79-0311
61	Sandstone N8 (very light gray) with thin stringers of sideritic globules and shale, fine grained.	242.8	3.4	S79-0312
62	Alternate shaly N5 (medium gray) and sandy N8 (very light gray) laminations with carbonaceous particles throughout.	246.2	2.1	S79-0313
63	Sandstone N8 (very light gray) fine grained with sideritic globule stringers throughout.	248.3	0.3	S79-0314
64	Alternate shaly N5 (medium gray) and sandy N8 (very light gray) laminations carbonaceous and sideritic throughout.	248.6	1.6	S79-0315
65	Alternate shale N3 (dark gray) and siderite 5YR5/6 (light brown) with rare pyrite band.	250.2	4.1	S79-0316
66	Siderite 5YR4/4 (moderate brown).	254.3	0.1	S79-0317
67	Shale N5 (medium gray) with brown siderite bands.	254.4	0.9	S79-0318
68	Shale N5 (medium gray) sandy towards bottom.	255.3	1.7	S79-0319
69	Shale in shades of N5 (medium gray) and N8 (very light gray), laminated.	257.0	1.7	S79-0320
70	Sandstone N8 (very light gray) siderite globules throughout.	258.7	0.9	S79-0321
71	Shale 5GY6/1 (greenish gray).	259.6	0.4	S79-0322
72	Loose cobbles and pebbles of siltstone and igneous rock(?).	260.0	0.3	S79-0323
73	Sandstone N7 (light gray) siderite globules throughout.	260.3	0.1	S79-0324
74	Geophysics Section.	260.4	0.8	None
75	Siltstone 5GY6/1 (greenish gray) sandy and sideritic at places.	261.2	7.4	S79-0325
76	Siltstone 5YR6/1 (light brownish gray) sideritic.	268.6	0.3	S79-0326
77	Shale 5GY6/1 (greenish gray) sideritic at places.	268.9	1.8	S79-0327

78	Siltstone 5GY6/1 (greenish gray) sandy throughout, sideritic at places.	270.7	2.0	S79-0328
79	Alternate siderite 10YR5/4 (moderate yellowish brown) and shale 5YR2/2 (dusky brown).	272.7	2.1	S79-0329
80	Coal N1 (black) with pyrite at places.	274.8	3.2	S79-0330
81	Core loss.	278.0	2.0	None
82	Coal N1 (black).	280.0	2.0	S79-0331
83	Shale N2 (grayish black) carbonaceous, pyritous.	282.0	1.2	S79-0332
84	Shale 10YR2/2 (dusky yellowish brown) sideritic, sandy towards bottom, specks of carbonaceous matter throughout.	283.2	2.5	S79-0333
85	Sandstone N8 (very light gray), fine grained.	285.7	0.4	S79-0334
86	Siltstone 5YR4/1 (brownish gray) sandy.	286.1	1.5	S79-0335
87	Sandstone N8 (very light gray) fine grained.	287.6	0.2	S79-0336
88	Sandstone N8 (very light gray) fine grained intermixed with shale 5YR4/1 (brownish gray).	287.8	0.2	S79-0337
89	Siltstone 5YR4/1 (brownish gray).	288.0	0.6	S79-0338
90	Interlaminated sand N8(very light gray) and shale 5YR4/1 (brownish gray).	288.6	1.1	S79-0339
91	Siltstone 5YR4/1 (brownish gray).	289.7	10.3	S79-0340
92	Siltstone 10YR2/2 (dusky yellowish brown) laminated with siderite bands.	300.0	0.5	S79-0341
93	Siderite 10YR5/4 (moderate yellowish brown).	300.5	0.3	S79-0342
94	Siltstone 10YR2/2 (dusky yellowish brown) sideritic throughout.	300.8	2.9	S79-0343
95	Siltstone/shale in shades of 10YR2/2 (dusky yellowish brown) and 10YR4/2 (dark yellowish brown), hematitic at places.	303.7	2.9	S79-0344
96	Core loss.	306.6	8.4	None

Survey Drill Hole No. 77
 280' FNL x 265' FEL NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 29, T. 17 N., R. 10 W.
 Vermillion County, Indiana
 Elevation 543 feet
 Drilling completed February 14, 1961
 Described by Prodip Dutta

Unit	Description	Depth	Thick- ness	Sample
	Pennsylvanian			
1	Core not split.	22.1	17.4	None
2	Shale, N2 (grayish black), laminated.	39.5	1.2	N79-0873
3	Shale, N4 (medium dark gray), laminated.	40.7	1.8	N79-0874
4	Shale, N2 (grayish black), laminated pyritous.	42.5	0.3	N79-0875
5	Shale, 10R6/2 (pale red), laminated sideritic throughout.	42.8	0.8	N79-0876
6	Sandstone, N8 (very light gray), fine grained, laminated with shale, carbonaceous.	43.6	0.2	N79-0877
7	Shale in shades of 5Y6/1 (light olive gray), and 10R4/2 (grayish red), sideritic throughout, sandy laminations and carbonaceous at places.	43.8	4.2	N79-0878
8	Sandstone, N7 (light gray), fine grained with fine laminations of carbonaceous particles and micas.	48.0	0.9	N79-0879
9	Shale, N6 (medium light gray), laminated, specks of carbonaceous matter present throughout.	48.9	0.7	N79-0880
10	Shale, N6 (medium light gray), laminated with sandy band and laminations, specks of carbonaceous matter common, sideritic at places.	49.6	2.5	N79-0881
11	Sandstone, N8 (very light gray), fine grained, fine laminations of carbonaceous material, siderite nodules and bands at places.	52.1	2.7	N79-0882
12	Sandstone, N8 (very light gray), fine grained interlaminated with micaceous - carbonaceous shale, N3 (dark gray).	54.8	0.7	N79-0883
13	Sandstone, N8 (very light gray), fine grained.	55.5	1.3	N79-0884
14	Shale, N6 (medium light gray), laminated, sideritic at top.	56.8	0.9	N79-0885
15	Sandstone, N8 (very light gray), fine grained, sideritic at top, laminations and carbonaceous materials at places.	57.7	0.6	N79-0886
16	Geophysics Sect.	58.3	0.6	None
17	Sandstone, N8 (very light gray), fine grained with carbonaceous shale and siderite laminations towards bottom.	58.9	2.1	N79-0887
18	Shale/siltstone, N6 (medium light gray), carbonaceous, sandy towards top.	61.0	0.8	N79-0888

19	Sandstone, N8 (very light gray), fine grained with carbonaceous shale laminations, sideritic.	61.8	0.4	N79-0889
20	Geophysics Sect.	62.2	1.4	None
21	Sandstone, N8 (very light gray), with carbonaceous shale laminations, sideritic.	63.6	1.3	N79-0890
22	Shale, N7 (light gray), with sandy laminations.	64.9	0.5	N79-0891
23	Shale, 5Y4/1 (olive gray), slightly sideritic at places.	65.4	6.1	N79-0892
24	Shale, N2 (grayish black).	71.5	0.1	N79-0893
25	Clay, 5Y4/1 (olive gray), silty, loose.	71.6	2.2	N79-0894
26	Siltstone in shades of 10R4/2 (grayish red) and 5GY8/1 (light greenish gray), highly sideritic throughout.	73.8	1.4	N79-0895
27	Siltstone, 5Y8/1 (yellowish gray), shale and siderite nodules at places.	75.2	1.7	N79-0896
28	Thinly laminated sandstone, N8 (very light gray), fine grained, and shale, N7 (light gray), siderite globules concentrated at places.	76.9	1.8	N79-0897
29	Sandstone, N7 (light gray), fine grained, shale laminations common, concentration of siderite nodules at places.	78.7	5.0	N79-0898
30	Shale, N6 (medium light gray), with occasional siderite bands and nodules.	83.7	3.3	N79-0899
31	Shale, 10YR4/2 (dark yellowish brown), sandy and sideritic, carbonaceous particle on bedding planes.	87.0	1.9	N79-0900
32	Shale, 10YR4/2 (dark yellowish brown), sandy and sideritic and carbonaceous at places.	88.9	9.6	N79-0901
33	Shale in shades of 10YR4/2 (dark yellowish brown) and 10R4/2 (grayish red), sideritic throughout.	98.5	4.6	N79-0902
34	Shale in shades of N3 (dark gray) and 5YR4/4 (moderate brown), sideritic.	103.1	0.7	N79-0903
35	Siderite, 5YR5/6 (light brown).	103.8	0.2	N79-0904
36	Shale in shades of N3 (dark gray) and 5YR4/4 (moderate brown), sideritic and carbonaceous.	104.0	1.2	N79-0905
37	Shale, N2 (grayish black), coating of moss like materials.	105.2	0.3	N79-0906
38	Siderite, 10YR5/4 (moderate yellowish brown), carbonaceous siderite at bottom.	105.5	0.3	N79-0907
39	Shale, N3 (dark gray) with siderite, 10YR6/2 (pale yellowish brown), bands and occasional siderite nodule and pyrite.	105.8	4.1	N79-0908
40	Shale, N5 (medium gray).	109.9	0.9	N79-0909
41	Shale, N2 (grayish black), carbonaceous, pyritous.	110.8	0.5	N79-0910
42	Geophysics Sect.	111.3	0.6	None
43	Shale, N1 (black), carbonaceous.	111.9	2.2	N79-0911

44	Core taken away by coal section.	114.1	1.4	None
45	Core loss.	115.5	1.7	None
46	Core not split.	117.2	12.8	None
47	Siltstone, 5Y6/1 (light olive gray), specks of carbonaceous material and sulfide mineral present at places.	130.0	1.2	N79-0912
48	Sandstone mottled in shades white gray and brown, grain size extremely variable, from very fine to coarse, clay clasts.	131.2	1.8	N79-0913
49	Siltstone, 5Y6/1 (light olive gray), siderite globules throughout.	133.0	0.4	N79-0914
50	Siltstone, N8 (very light gray), with gray shale laminations.	133.4	0.4	N79-0915
51	Siltstone, 5Y4/1 (olive gray), with thin sandy laminations.	133.8	0.5	N79-0916
52	Siltstone, 5Y4/1 (olive gray), with thin sandy laminations and siderite nodules.	134.3	1.0	N79-0917
53	Siltstone, 5Y4/1 (olive gray), with sandy laminations with occasional siderite globules.	135.3	1.5	N79-0918
54	Sandstone, N8 (very light gray), fine grained with shaly and sideritic laminations.	136.8	0.5	N79-0919
55	Geophysics Sect.	137.3	1.0	None
56	Sandstone, N8 (very light gray), laminated and sideritic throughout.	138.3	3.8	N79-0920
57	Shale, 5Y4/1 (olive gray).	142.1	1.3	N79-0921
58	Shale, 5Y4/1 (olive gray), with siderite bands, nodules, and scattered siderite globules.	143.4	6.1	N79-0922
59	Shale, 5Y4/1 (olive gray), with siderite bands, nodules, and scattered siderite globules.	149.5	2.6	N79-0923
60	Shale, N2 (grayish black), carbonaceous with vitrain bands.	152.1	0.5	N79-0924
61	Shale, N3 (dark gray), with carbonaceous materials.	152.6	0.7	N79-0925
62	Shale in shades of N2 (grayish black) and N3 (dark gray), sideritic and carbonaceous.	153.3	5.3	N79-0926
63	Shale, N2 (grayish black).	158.6	1.5	N79-0927
64	Shale, 5Y4/1 (olive gray), with broken shell fragments.	160.1	0.3	N79-0928
65	Shale, N2 (grayish black), carbonaceous, pyritous (?).	160.4	1.2	N79-0929
66	Geophysics Sect.	161.6	0.6	None
67	Shale in shades of N2 (grayish black) and N3 (dark gray), carbonaceous, pyritous at places, coating of white secondary materials (organic?).	162.2	2.7	N79-0930
68	Shale, N3 (dark gray), carbonaceous.	164.9	0.3	N79-0931
69	Clay, N5 (medium gray - light greenish at places) occasional carbonaceous and sideritic material present.	165.2	2.3	N79-0932

70	Shale mottled in shades of N3 (dark gray), 5Y8/1 (yellowish gray), and 10R4/6 (moderate reddish brown), siderite nodules common, pyritous at places.	167.5	1.0	N79-0933
71	Shale, N3 (dark gray).	168.5	0.2	N79-0934
72	Shale, N3 (dark gray), carbonaceous.	168.7	1.2	N79-0935
73	Shale, N7 (light gray), with siderite stringer and veinlets.	169.9	2.5	N79-0936
74	Shale, N4 (medium dark gray).	172.4	0.7	N79-0937
75	Shale, N3 (dark gray).	173.1	0.5	N79-0938
76	Shale, N7 (light gray), sandy.	173.6	0.4	N79-0939
77	Shale, 5R4/2 (grayish red), siderite throughout.	174.0	7.8	N79-0940
78	Clay, N4 (medium dark gray), silty.	181.8	0.8	N79-0941
79	Clay, 5Y2/1 (olive black).	182.6	0.7	N79-0942
80	Clay, N7 (light gray), silty with occasional carbonaceous matter.	183.3	4.0	N79-0943
81	Shale, 5Y6/1 (light olive gray).	187.3	0.7	N79-0944
82	Siltstone mottled in shades of gray and reddish brown, siderite globules are concentrated throughout.	188.0	0.5	N79-0945
83	Shale, 5GY6/1 (greenish gray).	188.5	0.7	N79-0946
84	Shale, 5GY56/1 (greenish gray), siderite globules at places.	189.2	0.4	N79-0947
85	Shale, 5GY6/1 (greenish gray).	189.6	1.1	N79-0948
86	Shale, 5GY6/1 (greenish gray), siderite globules at places.	190.7	1.3	N79-0949
87	Shale, 5GY6/1 (greenish gray).	192.0	2.4	N79-0950
88	Shale, N5 (medium gray), sideritic throughout with siderite bands at places.	194.4	3.8	N79-0951
89	Siderite, 10R4/6 (moderate reddish brown).	198.2	0.1	N79-0952
90	Shale, N5 (medium gray), sideritic throughout with siderite bands at places.	198.3	8.2	N79-0953
91	Siderite, 10R4/6 (moderate reddish brown).	206.5	0.1	N79-0954
92	Shale, N5 (medium gray).	206.6	1.0	N79-0955
93	Shale, N4 (medium dark gray), siderite at places.	207.6	1.2	N79-0956
94	Geophysics Sect.	208.8	1.4	None
95	Shale, N5 (medium gray), sideritic with bands and nodules of siderite at places, occasional yellow stains.	210.2	7.7	N79-0957

96	Shale, N5 (medium gray), sideritic carbonaceous, yellow and brown stains, plant fossils common.	217.9	1.2	N79-0958
97	Coal, N1 (black), calcite in cleats.	219.1	5.3	N79-0959
98	Siltstone, N7 (light gray), with carbonized rootlets.	224.4	1.2	N79-0960
99	Sandstone, N8 (very light gray), fine grained with carbonized rootlets.	225.6	1.8	N79-0961
100	Sandstone, N8 (very light gray), fine grained.	227.4	0.6	N709-0962
101	Geophysics Sect.	228.0	2.5	None
102	Sandstone, N8 (very light gray), fine grained with siderite band and nodule.	230.5	1.2	N79-0963
103	Shale, 5GY6/1 (greenish gray), carbonized plant material.	231.7	0.2	N79-0964
104	Sandstone, N8 (very light gray), fine grained with shale clasts and bands.	231.9	1.0	N79-0965
105	Sandstone, 5YR8/1 (pinkish gray), medium to coarse grained, sideritic globules concentrated throughout.	232.9	3.1	N79-0966
106	Geophysics Sect.	236.0	0.7	None
107	Sandstone, 5YR8/1 (pinkish gray), medium to coarse grained, siderite globules concentrated throughout.	236.7	10.3	N79-0967
108	Sandstone, 5YR8/1 (pinkish gray), medium to coarse grained, siderite globules concentrated throughout.	247.0	4.0	N79-0968
109	Geophysics Sect.	251.0	1.6	None
110	Sandstone, N8 (very light gray), medium grained with shale and carbonaceous shale laminations.	252.6	0.9	N79-0969
111	Shale, N3 (dark gray), sandy at places.	253.5	0.9	N79-0970
112	Shale in shades of 5Y6/1 (light olive gray) and N3 (dark gray), with sandy patches.	254.4	0.7	N79-0971
113	Sandstone, 5YR8/1 (pinkish gray), medium grained, siderite globules concentrated throughout.	255.1	1.4	N79-0972
114	Siderite, 10R4/6 (moderate reddish brown).	256.5	0.1	N79-0973
115	Sandstone, 5YR8/1 (pinkish gray), medium grained, siderite globules, concentrated throughout.	256.6	0.2	N79-0974
116	Shale in shades of N3 (dark gray) and 5GY6/1 (greenish gray), with sandy laminations.	256.8	0.4	N79-0975
117	Sandstone, N8 (very light gray), and shale, N6 (medium light gray), interlaminated.	257.2	0.2	N79-0976
118	Sandstone, N8 (very light gray), fine grained with occasional shale laminations.	257.4	3.0	N79-0977
119	Sandstone, N8 (very light gray), fine grained with laminated shale, N3 (dark gray) in the proportion of 4:1, occasional siderite bands and nodules.	260.4	3.7	N79-0978

120	Sandstone mottled in shades of red, gray, white and brown, coarse grained, clay clasts and siderite globules and nodules are common.	264.1	0.3	N79-0979
121	Shale, N2 (grayish black), sandy towards top.	264.4	0.2	N79-0980
122	Sandstone, 10R5/4 (pale reddish brown), fine to medium grained with siderite globules and nodules, carbonaceous materials common.	264.6	0.6	N79-0981
123	Shale, N4 (medium dark gray- reddish tinge at places) sideritic.	265.2	0.3	N79-0982
124	Sandstone, N8 (very light gray), fine grained with shale laminations, carbonaceous particles at places, siderite globules towards bottom.	265.5	1.2	N79-0983
125	Sandstone mottled in shades of red, gray, white and brown, coarse grained, clay clasts and siderite globules and nodules are common.	266.7	0.5	N79-0984
126	Sandstone, N8 (very light gray), and 5YR8/1 (pinkish gray), medium grained, concentration of siderite globules throughout.	267.2	1.8	N79-0985
127	Sandstone, 10R4/2 (grayish red), medium grained, highly sideritic.	269.0	0.2	N79-0986
128	Sandstone in shades of 10R4/2 (grayish red) and 5Y6/1 (light olive gray), concentration of siderite globules throughout.	269.2	0.2	N79-0987
129	Sandstone, N8 (very light gray), fine grained, carbonaceous streaks and siderite globules at places.	269.4	2.2	N79-0988
130	Core taken away.	271.6	0.2	None
131	Geophysics Sect.	271.8	0.8	None
132	Sandstone, N8 (very light gray), fine grained with carbonaceous bands and streaks, concentration of siderite globules at places.	272.6	5.8	N79-0989
133	Core taken away.	278.4	0.2	None
134	Sandstone, N8 (very light gray), fine grained with carbonaceous bands and streaks, siderite globules, nodules and bands at places.	278.6	7.9	N79-0990
135	Laminated sand, N8 (very light gray) and shale, N3 (dark gray), in proportion of 1:1, siderite bands and laminations common.	286.5	7.0	N709-0991
136	Geophysics Sect.	293.5	0.5	None
137	Shale, 10YR2/2 (dusty yellowish brown), sideritic throughout, sand laminae common, specks of carbonaceous matter present.	294.0	4.4	N79-0992
138	Sandstone, N8 (very light gray), and sideritic shale, 10YR2/2 (dusty yellowish brown), with siderite bands and laminations common.	298.4	0.7	N79-0993
139	Shale in shades of N3 (dark gray) and 10YR2/2 (dusty yellowish brown), laminated with lenses of sandstone, N8 (very light gray), sideritic throughout, sand and shale in proportion of 2:3, specks of carbonaceous material on bedding plane.	299.1	3.0	N79-0994
140	Laminated sand, N8 (very light gray) and shale, N3 (dark gray), in proportion of 1:1, siderite bands and laminations common, carbonaceous specks on bedding.	302.1	3.0	N79-0995

141	Shale, 10YR2/2 (dusty yellowish brown), sideritic throughout, sand laminae common, specks of carbonaceous matter on bedding.	305.1	1.0	N79-0996
142	Laminated sand, N8 (very light gray) and shale, N3 (dark gray), in proportion of 1:1, siderite bands and laminations common, carbonaceous specks on bedding.	306.1	9.4	N79-0997
143	Sandstone, 5Y6/1 (light olive gray), medium grained with siderite globules, nodules and laminae.	315.5	0.5	N79-0998
144	Sandstone, N8 (very light gray), fine grained with siderite globules and nodules.	316.0	0.9	N79-0999
145	Shale, 5Y6/1 (light olive gray), siderite globules common, occasional specks of carbonaceous matter.	316.9	0.2	S79-0001
146	Clay, 5Y6/1 (light olive gray), carbonized plant remains.	317.1	1.6	S79-0002
147	Shale, N3 (dark gray), carbonaceous.	318.7	0.7	S79-0003
148	Coal, N1 (black).	319.4	0.5	S79-0004
149	Underclay, 5Y6/1 (light olive gray), carbonaceous at places, carbonized plant materials throughout.	319.9	2.3	S79-0005
150	Underclay, 5Y6/1 (light olive gray), carbonized plant materials throughout.	322.2	1.8	A81-0434
151	Sandstone, N9 (white), fine grained with shale bands and laminations, light yellowish stains at places.	324.0	3.0	A81-0435
	St. Genevieve			
152	Siderite band and globules, 5YR3/4 (moderate brown), in a matrix of 5Y6/1 (light olive gray) clay.	327.0	0.7	A81-0436
153	Clay, 5Y6/1 (light olive gray) with siderite nodules; slickensided.	327.7	1.9	A81-0437
154	Shale, 5Y4/1 (olive gray) intermixed with N8 (very light gray), siltstone with occasional globules of siderite.	329.6	0.7	A81-0438
155	Shale, ferruginized, to siderite shale and sideritic bands, moderate brown, laminations of velvet shaly and silty materials.	330.3	5.6	A81-0439
156	Siderite, 10YR3/4 (dark reddish brown) to 10R4/6 (moderate reddish brown).	335.9	0.2	A81-0440
157	Siltstone, 5Y8/1 (yellowish gray), with siderite nodules.	336.1	1.8	A81-0441
158	Shale/siltstone, 5Y8/1 (yellowish gray), brecciated.	337.9	0.8	A81-0442
159	Carbonate, 10YR 8/2 (very pale orange), fine grained.	338.7	1.3	A81-0443
160	Carbonate, 5Y4/1 (olive gray) to 5Y2/1 (olive black), fine grained.	340.0	0.5	A81-0444
161	Carbonate, 5Y6/1 (light olive gray), fine grained, lithographic.	340.5	0.9	A81-0445
162	Carbonate, 5Y8/4 (grayish yellow), with intercalated shale at places.	341.4	1.2	A81-0446
163	Shale/siltstone, 5Y4/1 (olive gray), with N8 (very light gray), sandy laminations, siderite nodules and stringers are present.	342.6	1.1	A81-0447

164	Carbonate, 5Y8/4 (grayish yellow), fine grained.	343.7	0.4	A81-0448
165	Sandstone, N8 (very light gray), fine grained with shale laminations, siderite nodules and stringers, calcareous.	344.1	1.9	A81-0449
166	Shale, 5Y4/1 (olive gray), with bands of fine grained sandstone and carbonate.	346.0	0.7	A81-0450
167	Carbonate, 5Y8/4 (grayish yellow), fine grained.	346.7	0.5	A81-0451

Survey Drill Hole No. 78
 450' NL x 580' FEL NE¼SE¼NW¼ sec. 29, T. 17 N., R. 10 W.
 Vermillion County, Indiana
 Elevation 582 feet
 Drilling completed February 24, 1961
 Described by Prodip Dutta

Unit	Description	Depth	Thick- ness	Sample
	Pennsylvanian			
1	Core not split.	17.0	22.0	None
2	Core not split.	39.0	11.0	None
3	Shale, N4 (medium dark gray), highly fossiliferous (marine), calcareous.	50.0	0.7	N79-0197
4	Siderite rich shale, 5R4/2 (grayish red).	50.7	1.8	N79-0198
5	Shale, N4 (medium dark gray), highly fossiliferous (marine), calcareous.	52.5	0.7	N79-0199
6	Siderite rich shale, 5R4/2 (grayish red to very dusty red (10R2/2)).	53.2	0.8	N79-0200
7	Shale in shades of 5YR2/2 (dusty brown) and 10YR7/4 (grayish orange), fossiliferous, calcareous and sideritic.	54.0	1.0	N79-0201
8	Siderite rich shale, 5YR3/2 (grayish brown).	55.0	0.8	N79-0202
9	Clay, N6 (medium light gray).	55.8	0.6	N79-0203
10	Siderite, 10YR6/4 (light brown).	56.4	2.1	N79-0204
11	Shale, N4 (medium dark gray), sideritic.	56.6	2.1	N79-0205
12	Siderite, 5YR5/6 (light brown).	58.7	0.3	N79-0206
13	Shale, N4 (medium dark gray).	59.0	0.1	N79-0207
14	Siderite, 5YR5/6 (light brown).	59.1	0.2	N79-0208
15	Shale, N4 (medium dark gray), sandy.	59.3	2.1	N79-0209
16	Siderite, 5YR4/4 (moderate brown).	61.4	0.1	N79-0210
17	Shale and siltstone in shades of N4 (medium dark gray) and 5YR4/4 (moderate brown) with siderite nodules, bands, and calcareous lenses.	61.5	13.0	N79-0211
18	Core loss.	74.5	5.5	None
19	Siltstone in shades of N4 (medium dark gray) and 5YR4/4 (moderate brown) sideritic, fossiliferous, calcareous.	80.0	1.2	N79-0212
20	Shale, N4 (medium dark gray).	81.2	1.4	N79-0213
21	Shale, N2 (grayish black).	82.6	1.9	N79-0214

22	Shale, N4 (medium dark gray).	84.5	2.6	N79-0215
23	Geophysics Sect.	87.1	0.4	None
24	Shale, N4 (medium dark gray), with siderite and coaly stringer at top.	87.5	1.0	N79-0216
25	Sideritic shale in various shades of gray, white, and red, carbonaceous material along bedding.	88.5	3.9	N79-0217
26	Shale, N7 (light gray), sideritic, carbonaceous and sandy at places.	92.4	4.1	N79-0218
27	Siltstone in shades of N4 (medium dark gray) and 5YR4/4 (moderate brown), sideritic at top.	96.5	0.2	N79-0219
28	Sandstone, N8 (very light gray), fine grained, siderite globules concentrated along bedding at places.	96.7	1.7	N79-0220
29	Geophysics Sect.	98.4	2.4	None
30	Sandstone, N8 (very light gray), fine grained.	100.8	0.1	N79-0221
31	Geophysics Sect.	100.9	0.8	None
32	Siderite, 5YR4/4 (moderate brown).	101.7	0.2	N79-0222
33	Sandstone, N8 (very light gray), fine grained, sideritic and carbonaceous laminae present.	101.9	2.3	N79-0223
34	Shale, N6 (medium light gray), micaceous, sideritic at top.	104.2	1.3	N79-0224
35	Sandstone, 5YR8/1 (pinkish gray), fine grained, sideritic and carbonaceous laminae.	105.5	0.2	N79-0225
36	Geophysics Sect.	105.7	2.5	None
37	Shale, N6 (medium light gray), sandy.	108.2	1.2	N79-0226
38	Sandstone, 5Y8/1 (yellowish gray), fine grained, sideritic and carbonaceous shale laminae all throughout.	109.4	2.1	N79-0227
39	Shale, N6 (medium light gray), sandy.	111.5	0.3	N79-0228
40	Sandstone in shades of N8 (very light gray) and N5 (medium gray), fine grained, micaceous, carbonaceous particles.	111.8	0.4	N79-0229
41	Geophysics Sect.	112.2	0.7	None
42	Shale, N6 (medium light gray), black plant fragments.	112.9	8.5	N79-0230
43	Shale, N1 (black), with siderite bands.	121.4	0.2	N79-0231
44	Shale, N3 (dark gray).	121.6	0.5	N79-0232
45	Siltstone, 5Y8/1 (yellowish gray), siderite globules concentrated at places.	122.1	2.2	N79-0233
46	Sandstone, N9 (white), fine grained alternate with siltstone/shale, 5GY6/1 (greenish gray), concentration of siderite globules at places.	124.3	3.8	N79-0234
47	Shale, 5GY6/1 (greenish gray), silty and sideritic at places.	128.1	4.7	N79-0235

48	Sideritic sandstone, 10R8/2 (grayish orange pink).	132.8	0.5	N79-0236
49	Shale, 5Y4/1 (olive gray), silty and sideritic at places.	133.3	1.6	N79-0237
50	Siderite in shades of 5YR3/2 (grayish brown) and 5YR5/2 (pale brown).	134.9	0.2	N79-0238
51	Shale, N5 (medium gray), with occasional siderite band or zone.	135.1	1.1	N79-0239
52	Geophysics Sect.	136.2	0.9	None
53	Shale, 5Y4/1 (olive gray), sandy at places.	137.1	1.5	N79-0240
54	Geophysics Sect.	138.6	1.6	None
55	Shaly siderite, 5YR3/2 (grayish brown).	140.2	7.5	N79-0241
56	Shaly siderite in shades of 10YR2/2 (dusty yellowish brown) and 5YR5/2 (pale brown).	147.7	3.3	N79-0242
57	Siderite, 10YR5/4 (moderate yellowish brown), fossiliferous, pyrite mineralization (?) along the contact of fossil and siderite.	151.0	0.3	N79-0243
58	Shaly siderite in shades of 10YR2/2 (dusty yellowish brown) and 5YR5/2 (pale brown), calcareous and fossiliferous.	151.3	0.2	N79-0244
59	Shaly siderite in shades of 10YR2/2 (dusty yellowish brown) and 5YR5/2 (pale brown).	151.5	1.2	N79-0245
60	Shale, N1 (black).	152.7	0.4	N79-0246
61	Siderite, 5YR5/6 (light brown).	153.1	0.3	N79-0247
62	Sideritic shale in shades of 10YR2/2 (duty yellowish brown) and 5YR5/2 (pale brown), fossiliferous, calcareous.	153.4	4.5	N79-0248

Survey Drill Hole No. 79
 32' FNL x 65' FEL NE¼NW¼NE¼ sec. 27, T. 16 N., R. 10 W.
 Vermillion County, Indiana
 Elevation 630 feet
 Drilling completed March 28, 1961
 Described by Prodip Dutta

Unit	Description	Depth	Thick- ness	Sample
	Pennsylvanian			
1	Core not split.	130.0	29.5	None
2	Sandstone, yellowish gray (5Y8/1), very fine grained, contains bands and laminae of dark gray shale.	159.5	1.9	A80-0855
3	Shale, medium dark gray (N4), with sandy laminae; specks of carbonaceous materials scattered throughout.	161.4	0.3	A80-0856
4	Sandstone, yellowish gray (5Y8/1), with minor shale laminae.	161.7	1.3	A80-0857
5	Shale, medium dark gray (N4), interbedded and interlaminated with sandstone, very light gray (N8), fine grained.	163.0	0.4	A80-0858
6	Sandstone, very light gray (N8), fine grained with wavy laminations.	163.4	2.9	A80-0859
7	Sandstone, very light gray (N8), fine grained and dark gray (N3), shale laminated in the proportion 3:2.	166.3	0.6	A80-0860
8	Shale, dark yellowish brown (5GY6/2), sandy laminations, contorted at places; carbonaceous specks throughout; sideritic.	166.9	1.4	A80-0861
9	Clay, greenish gray (5GY6/1), carbonized rootlets.	168.3	0.6	A80-0862
10	Siltstone, light gray, laminated and bedded with sandstone, very light gray, fine grained in the proportion 3:1, carbonized rootlets and sideritic at places.	168.9	4.3	A80-0863
11	Shale, dark yellowish gray, with carbonaceous specks throughout, specks of carbonaceous material throughout.	173.2	1.6	A80-0864
12	Siltstone, light gray (N7), laminated and bedded with sandstone, very light gray, fine grained; oxidized patches around nodules.	174.8	2.4	A80-0865
13	Siltstone/shale, medium light gray with occasional sandy laminations and oxidized patches around nodules.	177.2	8.3	A80-0866
14	Clay, light olive gray (5Y8/1), with carbonized plant material, calcareous.	185.5	0.8	A80-0867
15	Siltstone mottled in shades of light gray (N7) and grayish red (5R4/2), with carbonized plant material.	186.3	0.3	A80-0868

16	Carbonate mottled in shades of grayish yellow (5Y8/4), greenish gray (5GY6/1), and dusty red (5R3/4), argillaceous.	186.6	2.1	A80-0869
17	Mudstone, greenish gray (5GY6/1), with reddish stringer of siderite (?); calcareous.	188.7	0.4	A80-0870
18	Siltstone, greenish gray (5G6/1), sandy, sideritic, and lightly calcareous.	189.1	1.3	A80-0871
19	Sandstone, very light gray (N8), fine grained with siderite bands and nodules; calcareous.	190.4	3.5	A80-0872
20	Sandstone, very light gray (N8), laminated with greenish gray (5G6/1), grades downwards to shale; sandy part calcareous.	193.9	0.7	A80-0873
21	Shale, greenish gray (5GY6/1), sideritic at places, sandy towards bottom.	194.6	3.1	A80-0874
22	Sandstone in shades varying between very light gray (N8) and light gray (N7), sideritic with shale laminae at middle; calcareous.	197.7	2.1	A80-0875
23	Laminated shale, greenish gray (5GY6/1) and sandstone, very light gray (N8), in the proportion of 1:1.	199.8	1.3	A80-0876
24	Siltstone/shale in shades of greenish gray (5GY6/1) and dark greenish gray (5GY4/1), specks of carbonaceous material.	201.1	1.5	A80-0877
25	Shale, dark yellowish brown (10YR4/2), with carbonized plant remains throughout; sideritic at places.	202.6	10.2	A80-0878
26	Shale in shades of dusty brown (5YR2/2) to moderate brown (5YR4/4), highly sideritic.	212.8	1.4	A80-0879
27	Carbonate, grayish black (N2), argillaceous, fossiliferous.	214.2	0.2	A80-0880
28	Shale, dark gray (N3), plant fossil impression.	214.4	0.8	A80-0881
29	Siderite, moderate yellowish brown (10YR5/4).	215.2	0.3	A80-0882
30	Shale, black (N1).	215.5	0.8	A80-0883
31	Shale, dark yellowish brown, carbonaceous and sandy at places.	216.3	9.1	A80-0884
32	Core not split.	225.4	19.1	None
33	Sandstone, pinkish gray (5YR8/1), fine grained, bedded and interlaminated with dark yellowish brown (10YR5/4), shale.	244.5	3.2	A80-0885
34	Siltstone, pale yellowish brown (10YR6/2) interbedded with dark yellowish brown (10YR4/2) shale, carbonaceous particles at places.	247.7	2.6	A80-0886
35	Sandstone, pinkish gray (5YR8/1), with carbonaceous shale laminations.	250.3	0.7	A80-0887
36	Shale/siltstone in shades of pale yellowish brown (10YR6/2) and dark yellowish brown (10YR4/2), carbonized plant fossil and specks of carbonaceous particles on bedding plane.	251.0	1.8	A80-0888
37	Sandstone, pinkish gray (5YR8/1), with specks of carbonaceous particles throughout.	252.8	0.9	A80-0889

38	Shale, dark yellowish brown (10YR4/2), with carbonized plant fossil and specks of carbonaceous material.	253.7	2.6	A80-0890
39	Sandstone, pinkish gray (5YR8/1), interbedded and interlaminated with dark yellowish brown (10YR4/2), carbonaceous shale.	256.3	1.7	A80-0891
40	Sandstone, very light gray (N8), fine grained with pale yellowish brown (10YR6/2), clay clasts and specks of carbonaceous material.	258.0	0.7	A80-0892
41	Sandstone, yellowish gray (5Y8/1), fine grained, sideritic throughout; clay clasts and carbonaceous specks at places.	258.7	1.8	A80-0893
42	Shale, black (N1), carbonaceous with gray sandy patches.	260.5	0.5	A80-0894
43	Siltstone/shale, light greenish gray (5GY8/1), sideritic at middle, yellow and dark yellow stains at places.	261.0	3.3	A80-0895
44	Core not split.	264.3	15.7	None
45	Core not split.	280.0	10.0	None
46	Core not split.	290.0	18.0	None
47	Core not split.	308.0	7.1	None
48	Shale/siltstone, medium dark gray (N4), with carbonized rootlets towards top, siderite nodules throughout and sandy and laminated towards bottom.	315.1	4.1	A80-0896
49	Shale/siltstone, dark yellowish brown, laminated with sandy laminae, sideritic throughout.	319.2	4.8	A80-0897
50	Siltstone/shale in shades of dark yellowish brown (10YR4/2) and moderate yellowish brown (10YR5/4), sideritic throughout.	324.0	3.2	A80-0898
51	Shale, greenish gray (5GY6/1), sideritic throughout, occasional shale, greenish gray (5GY6/1).	327.2	3.7	A80-0899
52	Shale, greenish gray (5GY6/1).	330.9	2.2	A80-0900
53	Carbonate, grayish red (5R4.2), fine grained.	333.1	0.7	A80-0901
54	Carbonate, light gray (N7), fine grained; fossiliferous, occasional specks of sulfide minerals.	333.8	2.0	A80-0902
55	Carbonate, medium light gray (N6) to light gray (N7), fine grained argillaceous and fossiliferous.	335.8	1.3	A80-0903
56	Shale (core missing).	337.1	0.1	None
57	Coal (core not split).	337.2	3.6	None
58	Underclay in shades of olive gray (5Y4/1) and light olive gray (5Y6/1), lighter shades towards bottom; carbonized plant and rootlets.	340.8	3.0	A80-0904

59	Siltstone, greenish gray (5GY6/1), laminated with sandy laminae, yellow stains at places.	343.8	2.6	A80-0905
60	Sandstone, very light gray (N8), fine grained, interbedded and interlaminated with greenish gray (5GY6/1) in the proportion of 3:1.	346.4	3.0	A80-0906
61	Sandstone, very light gray (N8), medium to coarse grained, slightly calcareous.	349.4	2.4	A80-0907
62	Siltstone, yellowish gray (5Y8/1) with greenish gray (5GY6/1), shale laminations.	351.8	0.3	A80-0908
63	Sandstone, very light gray (N8), medium to coarse grained, slight yellow stains at places, highly calcareous.	352.1	7.9	A80-0909
64	Core removed.	360.0	2.5	None
65	Sandstone, very light gray, (N8), fine to coarse grained, siderite bands and globules at places, occasional yellow stains, calcareous.	362.5	19.8	A80-0910
66	Sandstone mottled in shades of very light gray (N8) and light brown (5YR5/6), medium grained, calcareous.	382.3	0.7	A80-0911
67	Sandstone, very light gray (N8), medium grained, carbonaceous concentration of siderite globules scattered throughout.	383.0	6.4	A80-0912
68	Sandstone, very light gray (N8), fine to medium grained, occasional concentration of siderite globules, calcareous.	389.4	7.1	A80-0913
69	Sandstone, pinkish gray (5YR8/1), medium to coarse grained, clay clasts at the top; concentration of siderite globules throughout, calcareous.	396.5	6.0	A80-0914
70	Sandstone, pinkish gray (5YR8/1), medium to coarse grained, high concentration of siderite globules throughout with specks of carbonaceous matter scattered all through.	402.5	13.8	A80-0915
71	Sandstone, very light gray (N8), medium to coarse grained, siderite globules scattered throughout, rare calcareous nodules and carbonaceous particles, calcareous.	416.3	1.8	A80-0916
72	Laminated sandstone, pinkish gray (5YR8/1), fine grained, and shale, light brownish gray (5YR6/1) in the proportion of 2:1, sideritic, carbonaceous, laminated.	418.1	6.5	A80-0917
73	Shale, medium dark gray (N4), carbonaceous, laminated with sandy laminae, siderite nodules at top.	424.6	0.8	A80-0918
74	Sandstone, very light gray, (N8), fine grained, with dark gray to pale yellowish brown shale bands.	425.4	1.7	A80-0919
75	Shale, medium dark gray (N4), carbonaceous, laminated with sandy laminae, very light gray.	427.1	2.4	A80-0920
76	Sandstone in shades of very light gray (N8), and grayish yellow (5Y8/4), siderite nodules and clay clasts common, occasional shale band, calcareous towards top.	429.5	2.9	A80-0921
77	Sandstone, moderate brown (5YR4/4), fine to medium grained, high concentration of siderite globules throughout with occasional siderite nodules, calcareous.	432.4	6.6	A80-0922

78	Siderite, moderate brown (5YR4/4).	439.0	0.6	A80-0923
79	Sandstone in shade of moderate brown (5YR4/4), medium grained, high concentration of siderite globules throughout with occasional siderite nodule; calcareous.	439.6	5.1	A80-0924
80	Sandstone, very light gray (N8), medium grained with occasional siderite globule and nodule, calcareous.	444.7	1.3	A80-0925
81	Sandstone in shades of moderate brown (5YR4/4), medium to coarse grained, high concentration of siderite globules throughout with occasional siderite nodules; calcareous.	446.0	7.8	A80-0926
82	Siderite, light brown (5YR5/6), sandy, calcareous.	453.8	0.3	A80-0927
83	Sandstone in shades of moderate brown (5YR5/6), medium to coarse grained, high concentration of siderite globules throughout, calcareous.	454.1	3.4	A80-0928
84	Siderite, dark yellowish brown (10YR4/2), with a thin sandy lense.	457.5	0.8	A80-0929
85	Sandstone, very light gray (N8), medium grained with pebble sized shale clasts and siderite nodules.	458.3	1.4	A80-0930
86	Shale, medium dark gray (N4), with a siderite band.	459.7	0.5	A80-0931
87	Sandstone, very light gray (N8), medium grained with occasional siderite nodules.	460.2	0.5	A80-0932
88	Siderite, pale brown (5YR5/2).	460.7	0.1	A80-0933
89	Core loss.	460.8	2.0	None
90	Sandstone, very light gray, (N8), medium grained with occasional siderite nodule, calcareous.	462.8	2.5	A80-0934
91	Sandstone, very light gray (N8), medium grained, concentration of siderite globules throughout, red and brown color at places are due to siderite, yellow stain at the center, calcareous.	465.3	3.1	A80-0935
92	Sandstone, very light gray (N8), medium to coarse grained, with siderite bands and nodules, calcareous.	468.4	6.0	A80-0936
93	Siderite, moderate brown (5YR4/4).	474.4	0.2	A80-0937
94	Sandstone, very light gray (N8), coarse to medium grained with occasional siderite nodules calcareous.	474.6	7.1	A80-0938
95	Shale, medium gray, with sand lense.	481.7	0.3	A80-0939
96	Sandstone, very light gray (N8), with shale clasts and bands along with siderite nodules and bands scattered throughout, calcareous.	482.0	4.8	A80-0940
97	Siderite, moderate yellowish brown (10YR5/4).	486.8	0.3	A80-0941
98	Clay, very light gray (N8), with dark yellow stains.	487.1	0.5	A80-0942

99	Sandstone, very light gray (N8), medium grained, shale clasts, siderite nodules and bands scattered throughout, calcareous.	487.6	10.1	A80-0943
100	Coal, black (N1), with pyrite lense at top, calcite in clasts throughout.	497.7	0.8	A80-0944
101	Underclay, olive black (5Y2/1), with carbonaceous stringers and carbonized rootlets, carbonaceous at top and at bottom.	498.5	2.1	A80-0945
102	Coal, black (N1).	500.6	0.2	A80-0946
103	Shale, black (N1), carbonaceous with coal stringer.	500.8	0.3	A80-0947
104	Siltstone/shale, medium dark gray (N4), carbonaceous.	501.1	0.6	A80-0948
105	Siltstone, light gray (N7), sandy at places.	501.7	2.0	A80-0949
106	Sandstone, very light gray (N8), very fine grained.	503.7	13.3	A80-0950

Survey Drill Hole #116
 30' FNL X 20' FEL NE¹/₄NE¹/₄NE¹/₄ Sec. 16, T. 15 N., R. 10 W.
 Vermillion County, Indiana
 Elevation 615 feet
 Drilling completed April 24, 1964

Described by Prodip Dutta

Core description

Unit	Description	Depth (ft)	Thickness (ft)	Sample No.
Pennsylvanian				
1.	Sandstone N8 (very light gray) fine grained with thin shale laminations, siderite at places.	60.0	1.9	S79-255
2.	Siltstone N7 (light gray)	61.9	0.3	S79-256
3.	Sandstone N8 (very light gray) fine grained interbedded with siltstone N7 (light gray) in the ratio of 3:1.	62.2	0.9	S79-257
4.	Sandstone N8 (very light gray) fine grained, well sorted.	63.1	0.6	S79-258
5.	Sandstone N8 (very light gray) fine grained and siltstone N7 (light gray) interlaminated in the proportion of 1:1, sideritic at places.	63.7	1.1	S79-259
6.	Sandstone N8 (very light gray) fine grained with thin shale laminations at places.	64.8	1.8	S79-260
7.	Sandstone N8 (very light gray) fine grained with occasional siderite bands.	66.6	5.4	S79-261
8.	Siltstone N7 (light gray) sandy and sideritic at places.	72.0	0.6	S79-262
9.	Sandstone N8 (very light gray) fine grained.	72.6	1.4	S79-263
10.	Sandstone 10YR7/4 (grayish orange) fine grained and siltstone 5GY8/1 (light greenish gray).	74.0	0.5	S79-264
11.	Geophysics Section.	74.5	0.9	None
12.	Sandstone N8 (very light gray) fine grained, occasional siderite globules at places.	75.4	2.2	S79-265
13.	Geophysics Section.	77.6	0.7	None

14.	Sandstone N8 (very light gray) fine grained, sideritic towards top.	78.3 80.0	1.7 0.8	S79-266 S79-267
15.	Shale 5GY8/1 (light greenish gray) laminated, siderite globule concentration at places.	80.8	5.3	S79-268
16.	Siltstone/shale N7 (light gray) sideritic at places.	86.1	4.0	S79-269
17.	Siderite 5YR5/6 (light brown).	90.1	0.2	S79-270
18.	Shale N6 (medium light gray) laminated with sandy stringers.	90.3	1.0	S79-271
19.	Shale N6 (medium light gray)	91.3	1.9	S79-272
20.	Shale N6 (medium light gray) laminated with sandy stringers.	93.2	6.8	S79-273
21.	Shale N5 (medium gray) with occasional sandy laminations, sideritic at places.	100.0	18.0	S79-274
22.	Siderite 5YR5/6 (light brown).	118.0	0.2	S79-275
23.	Shale N6 (medium light gray) sideritic at places.	118.2	1.1	S79-276
24.	Siderite 5YR5/6 (light brown).	119.3	0.3	S79-277
25.	Shale N6 (medium light gray).	119.6	0.4	S79-278
26.	Shale N6 (medium light gray).	120.0	1.0	S79-279
27.	Siderite 5YR5/6 (light brown).	121.0	0.6	S79-280
28.	Shale N6 (medium light gray) rarely sideritic.	121.6	7.0	S79-281
29.	Siderite 5YR3/2 (grayish brown).	128.6	0.2	S79-282
30.	Shale N6 (medium light gray).	128.8	3.7	S79-283
31.	Shale in shades of 5YR2/1 (brownish black) and N5 (medium gray) rarely sideritic.	132.5	3.5	S79-284
32.	Shale N2 (grayish black) carbonaceous.	136.0	0.2	S79-285
33.	Shale N5 (medium gray).	136.2	0.6	S79-286
34.	Underclay N7 (light gray).	136.8	1.8	S79-287
35.	Sideritic claystone mottled in shades of brown and yellow.	138.6	1.4	S79-288

36.	Core loss 18'. Sample not representative.	140.0	20.0	S79-289
37.	Shale N7 (light gray).	160.0	6.5	S79-290
38.	Siderite 10YR6/6 (dark yellowish orange).	166.5	0.1	S79-291
39.	Shale N7 (light gray) with specks of sulfide mineral (pyrite) at places.	166.6	4.4	S79-292
40.	Shale N7 (light gray).	171.0	4.3	S79-293
41.	Siderite 10YR5/4 (moderate yellowish brown).	175.3	0.2	S79-294
42.	Shale N4 (medium dark gray), sideritic at places.	175.5	5.2	S79-295
43.	Geophysics Section.	180.7	0.9	None
44.	Shale N4 (medium dark gray).	181.6	8.4	S79-296
45.	Siltstone 10YR4/2 (dark yellowish brown) specks of carbonaceous material throughout.	190.0	5.9	S79-297
46.	Shale 10YR4/2 (dark yellowish brown) sideritic(?)	195.9	9.1	S79-298
47.	Siltstone 10YR4/2 (dark yellowish brown), sideritic at places.	205.0	15.0	S79-299
48.	Shale 10YR4/2 (dark yellowish brown with patches of light brown) sideritic throughout.	220.0	6.9	S79-300
49.	Siderite 10YR5/4 (moderate yellowish brown).	226.9	0.1	S79-301
50.	Shale 10YR4/2 (dark yellowish brown), sideritic throughout with siderite bands.	227.0	4.8	S79-302
51.	Siderite 10YR5/4 (moderate yellowish brown).	231.8	0.1	S79-303
52.	Shale 10YR4/2 (dark yellowish brown) with light yellow siderite bands.	231.9	0.7	S79-304
53.	Shale N3 (dark gray) fossiliferous, sulfide minerals at places.	232.6	0.4	S79-305
54.	Geophysics Section.	233.0	0.5	None
55.	Shale N3 (dark gray) carbonaceous towards bottom.	233.5	2.1	S79-306
56.	Coal N1 (black).	235.6	1.0	S79-307
57.	Shale N4 (medium dark gray) with carbonaceous and coaly bands.	236.6	0.6	S79-308

58.	Shale/siltstone N4 (medium dark gray) with light coloured sandy laminae.	237.2	1.4	S79-309
59.	Sandstone N8 (very light gray) with light gray shale bands and laminations.	238.6	1.4	S79-310
60.	Alternate shaly and sandy lamination in shades of N5 (medium gray) and N8 (very light gray) with carbonaceous particles throughout.	240.0	2.8	S79-311
61.	Sandstone N8 (very light gray) with thin stringers of sideritic globules and shale, fine grained.	242.8	3.4	S79-312
62.	Alternate shaly N5 (medium gray) and sandy N8 (very light gray) laminations with carbonaceous particles throughout.	246.2	2.1	S79-313
63.	Sandstone N8 (very light gray) fine grained with sideritic globule stringers throughout.	248.3	0.3	S79-314
64.	Alternate shaly N5 (medium gray) and sandy N8 (very light gray) laminations carbonaceous and sideritic throughout.	248.6	1.6	S79-315
65.	Alternate shale N3 (dark gray) and siderite 5YR5/6 (light brown) with rare pyrite band.	250.2	4.1	S79-316
66.	Siderite 5YR4/4 (moderate brown).	254.3	0.1	S79-317
67.	Shale N5 (medium gray) with brown siderite bands.	254.4	0.9	S79-318
68.	Shale N5 (medium gray) sandy towards bottom.	255.3	1.7	S79-319
69.	Shale in shades of N5 (medium gray) and N8 (very light gray), laminated.	257.0	1.7	S79-320
70.	Sandstone N8 (very light gray) siderite globules throughout.	258.7	0.9	S79-321
71.	Shale 5GY6/1 (greenish gray).	259.6	0.4	S79-322
72.	Loose cobbles and pebbles of siltstone and igneous rock(?).	260.0	0.3	S79-323
73.	Sandstone N7 (light gray) siderite globules throughout.	260.3	0.1	S79-324
74.	Geophysics Section.	260.4	0.8	None
75.	Siltstone 5GY6/1 (greenish gray) sandy and sideritic at places.	261.2	7.4	S79-325

76.	Siltstone 5YR6/1 (light brownish gray) sideritic.	268.6	0.3	S79-326
77.	Shale 5GY6/1 (greenish gray) sideritic at places.	268.9	1.8	S79-327
78.	Siltstone 5GY6/1 (greenish gray) sandy throughout, sideritic at places.	270.7	2.0	S79-328
79.	Alternate siderite 10YR5/4 (moderate yellowish brown) and shale 5YR2/2 (dusky brown).	272.7	2.1	S79-329
80.	Coal N1 (black) with pyrite at places.	274.8	3.2	S79-330
81.	Core loss.	278.0	2.0	None
82.	Coal N1 (black).	280.0	2.0	S79-331
83.	Shale N2 (grayish black) carbonaceous, pyritous.	282.0	1.2	S79-332
84.	Shale 10YR2/2 (dusky yellowish brown) sideritic, sandy towards bottom., specks of carbonaceous matter throughout.	283.2	2.5	S79-333
85.	Sandstone N8 (very light gray), fine grained.	285.7	0.4	S79-334
86.	Siltstone 5YR4/1 (brownish gray) sandy.	286.1	15	S79-335
87.	Sandstone N8 (very light gray) fine grained.	287.6	0.2	S79-336
88.	Sandstone N8 (very light gray) fine grained intermixed with shale 5YR4/1 (brownish gray).	287.8	0.2	S79-337
89.	Siltstone 5YR4/1 (brownish gray).	288.0	0.6	S79-338
90.	Interlaminated sand N8 (very light gray) and shale 5YR4/1 (brownish gray).	288.6	1.1	S79-339
91.	Siltstone 5YR4/1 (brownish gray).	289.7	10.3	S79-340
92.	Siltstone 10YR2/2 (dusky yellowish brown) laminated with siderite bands.	300.0	0.5	S79-341
93.	Siderite 10YR5/4 (moderate yellowish brown).	300.5	0.3	S79-342
94.	Siltstone 10YR2/2 (dusky yellowish brown) sideritic throughout.	300.8	2.9	S79-343
95.	Siltstone/shale in shades of 10YR2/2 (dusky yellowish brown) and 10YR4/2 (dark yellowish brown), hematitic at places.	303.7	2.9	S79-344
96.	Core loss.	306.6	8.4	None