Bioturbated Interlaminated Sandstone

Gamma-Ray Log

No gamma-ray log available

278 ft

230 ft

250 ft

270 ft

290 ft

310 ft

in/cm

[Image of geological sample and log]
I. NAME: Bioturbated interlaminated sandstone
   Formation: Tradewater

II. DESCRIPTION:
   Texture: Sand – fine-grained (0.125 - 0.250 mm)
               subangular to subrounded
   Composition: Sand – quartz with silica, kaolinite,
                and siderite cement, carbonaceous material common
   Sedimentary structures and features:
               Bioturbation
   Fossils: Trace fossils include Teichichnus and
            Conosticus - Astersoma

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
   No gamma-ray well-log available.

Map showing area of Pennsylvanian rocks and location of corehole.
Disturbed-Bedded Interlaminated Sandstone

Gamma-Ray Log

Log T.D. = 243 ft

Well T.D. = 256 ft

Ss i d 1 [010 faulted]
I. NAME: Disturbed-bedded interlaminated sandstone
   Formation: Tradewater

II. DESCRIPTION:
   Texture: Sand – very fine-grained (0.0625 - 0.125 mm) subangular to subrounded
   Composition: Sand – quartz, small mudstone clasts and carbonaceous material concentrated along bedding planes

Sedimentary structures and features:
   Microfaulting
   Fossils: None observed

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
   The abrupt changes in lithology from 255 ft to the top of the section results in an irregular gamma-ray well-log signature.

Map showing area of Pennsylvanian rocks and location of corehole.
NSWC Crane IGS-(D)5
Sec. 20 - T5N - R3W
Martin County, Indiana

Disturbed-Bedded Interlaminated Sandstone and Shale

Gamma-Ray Log

Log T.D. = 170 ft

Well T.D. = 178 ft
I. NAME: Disturbed-bedded interlaminated sandstone and shale
   Formation: Mansfield

II. DESCRIPTION:
   Texture: Sand – very fine-grained (0.0625 - 0.125 mm)
             subangular to subrounded
   Composition: Sand – quartz with silica cement
             Clay – unknown
   Sedimentary structures and features: Disturbed bedding
   Fossils: None observed

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
   The disturbed-bedded (slumped) facies represented in the photograph is part of an upward-fining succession (175 ft to 145 ft). The presence of abundant clay associated with the sandstone results in poorly developed bell-shaped gamma-ray well-log signature with a serrated character.
Disturbed-Bedded Interlaminated Sandstone and Shale

Gamma-Ray Log

Log T.D. = 170 ft

Well T.D. = 178 ft

322.8 rip
I. NAME: Disturbed-bedded interlaminated sandstone and shale
Formation: Mansfield

II. DESCRIPTION:
Texture: Sand – very fine-grained (0.0625 - 0.125 mm) subangular to subrounded
Clay – (less than 0.0039 mm)
Composition: Sand – quartz with silica cement
Clay – unknown
Sedimentary structures and features:
Microfaulting, load-casted ripples, lenticular bedding
Fossils: None observed

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
The vertical succession containing the disturbed-bedded sample represents a complex lithofacies assemblage dominated by fine-grained rocks with abruptly alternating lithologies and an upward-fining grain-size trend from the base of the columnar profile to the lenticular-bedded shale at 146 ft. The result is an irregular to slightly bell-shaped gamma-ray well-log signature.
Borehole 571
Sec. 14 - M - 21
Webster County, Kentucky

Rooted Massive Siltstone

Gamma-Ray Log

868 ft

API

Ft m r 1 [327]
I. NAME: Rooted massive siltstone  
   Formation: Carbondale

II. DESCRIPTION:  
   Texture: Sand – very fine-grained  
              (0.0625 - 0.125 mm)  
              subangular to subrounded  
   Silt and clay – (less than 0.0625 mm)
   Composition: Sand and silt – quartz with silica and clay cement, approximately 25 percent of roots pyritized, scattered mica common  
   Clay – unknown
   Sedimentary structures and features: Bioturbation from rooting
   Fossils: Fossil roots

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:  
The gamma-ray well-log shows three vertical successions. From the base of the columnar profile (918 ft) to the coal (865 ft), the abrupt changes in grain size and slight upward-fining grain-size trend result in an irregular signature. The second interval which begins above the coal and ends with the radioactive shale at 840 ft shows a symmetrical gamma-ray well-log signature. The third interval beginning with the limestone at 838 ft and ending with the coal at the top of the columnar profile shows an irregular to slightly funnel-shaped gamma-ray signature.

Map showing area of Pennsylvanian rocks and location of corehole.
I. NAME:
   Rooted massive siltstone Formation: Linton

II. DESCRIPTION:
   Texture: Sand – very fine-grained
   (0.0625 - 0.125 mm)
   subangular to subrounded
   Silt and clay – (less than 0.0625 mm)
   Composition: Sand and silt – quartz with minor mica
   Clay – unknown
   Sedimentary structures and features:
   Bioturbation from rooting
   Fossils: Fossil roots

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
   The gamma-ray well-log shows a poorly developed funnel-shaped signature from the top of the ripple-bedded sandstone at 846 ft to the top of the coal at 820 ft.
Borehole No. 613
Sec. 25 - M - 21
Webster County, Kentucky

Gamma-Ray Log

Ft m r 3 [377]
I. NAME: Rooted massive siltstone Formation: Shelburn (?)

II. DESCRIPTION:
Texture: Clay - (less than 0.0039 mm)
Silt - (0.0039 - 0.0625 mm)
Sand - very fine-grained
(0.0625 - 0.250 mm)
subangular to subrounded
Composition: Clay - unknown
Silt and sand - quartz with minor siderite
Sedimentary structures and features:
Mottled appearance due to rooting and probable paleosol development
Fossils: Fossil roots

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
The columnar profile represents a stratigraphic succession dominated by shales with lesser amounts of sandstone and limestone. The high gamma-ray spikes at 690 ft and 717 ft are thin radioactive black shales. The lack of a significant grain-size trend and the abrupt change in lithologies result in an irregular gamma-ray well-log signature.

Map showing area of Pennsylvanian rocks and location of corehole.
I. NAME: Horizontal-bedded siltstone Formation: Brazil

II. DESCRIPTION:
  Texture: Silt – (0.0039 - 0.0625 mm)
  Clay – (less than 0.0039 mm)
  Composition: Silt – quartz with siderite, mica abundant along bedding planes
  Clay – unknown
  Sedimentary structures and features: Horizontal bedding
  Fossils: None observed

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
  The gamma-ray well-log signature across the 100-foot interval represented by the columnar profile is best described as irregular. The high gamma-ray spike from 433 to 439 ft is a radioactive black shale.

Map showing area of Pennsylvanian rocks and location of corehole.
Borehole No. 593
Sec. 19 - M - 21
Webster County, Kentucky

Gamma-Ray Log

Horizontal-Bedded Siltstone

Ft h z 2 [323.6]
I. NAME: Horizontal-bedded siltstone
   Formation: Shelburn

II. DESCRIPTION:
   Texture: Silt and clay – (0.0030 - 0.0625 mm)
   Minor sand – very fine-grained (0.0625 - 0.125 mm)

   Composition: Clay – unknown, finely disseminated plant debris
   Silt and Sand – quartz with small patches of siderite

   Sedimentary structures and features:
   Faint horizontal bedding, possible rhythmic bedding

   Fossils: Disseminated plant debris

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
   The columnar profile shows a succession dominated by fine-grained facies which shows a gradual up-section increase in grain size. In response to this subtle upward-fining grain-size trend, the gamma-ray well-log shows a poorly developed funnel-shaped signature.

Map showing area of Pennsylvanian rocks and location of corehole.
Borehole No. 545
Sec. 16 - M - 21
Webster County, Kentucky

Bioturbated Horizontal-Bedded Siltstone

Gamma-Ray Log

Ft h b 1 [328]
I. NAME: Bioturbated horizontal-bedded siltstone
   Formation: Patoka

II. DESCRIPTION:
   Texture: Clay – (less than 0.0039 mm)
            Silt – (0.0039 - 0.0625 mm)
   Composition: Clay – unknown
              Silt – quartz with silica and calcareous cement
   Sedimentary structures and features:
              Horizontal lamination
   Fossils: Bioturbation, brachiopod debris
              including productids and productid spines, echinodermal debris (including spines), encrusting bryozoans, gastropods

III. GAMMA-RAY WELL-LOG CHARACTERISTICS:
   With the exception of the cross-bedded sandstone dominated interval (378 ft to 366 ft), the vertical succession shown by the columnar profile is dominated by fine-grained rocks. Therefore, the gamma-ray well-log reads at or near the shale baseline across most of the succession. The high gamma-ray spikes at 362 ft and 423 ft are radioactive black shales. The gamma-ray well-log curve shows an overall upward-fining trend from 378 ft to 362 ft resulting in an irregular bell-shaped gamma-ray signature.

Map showing area of Pennsylvanian rocks and location of corehole.