DEPARTMENT OF THE INTERIOR

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A preliminary report on the stratigraphy of previously unreported Devonian ash-fall localities in the Appalachian basin

by

John B. Roen

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This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards.

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INTRODUCTION

This report contains preliminary stratigraphic assignments, location descriptions, and an index map for 25 localities of Devonian ash falls in the Appalachian basin. Only two, locality 6 and locality 11, of the 25 localities have been previously reported. The ash beds at these two localities are included here because they have been reassigned stratigraphically. The ash bed of locality 6 was assigned to the Tioga Bentonite by Dennison and Boucot (1974). Locality 11, an ash bed noted by Harris and Miller (1958) was thought by Conant and Swanson (1961, p. 31) to be part of the Center Hill Bentonite bed. One the basis of recent regional stratigraphic studies both beds are here given new stratigraphic identification (see localities 6 and 11 of table 1).

Preliminary conclusions based on the recently discovered ash beds suggest that vulcanism associated with Middle and Upper Devonian black shale sedimentation was more prevalent than previously known. Therefore, the purpose of this report is to present in a timely manner the current data available on these recently discovered ash-fall localities, so that others working in the Devonian black-shale sequence will be alerted to the intervals where these thin, easily overlooked, biotite-rich ash beds might be found.

This report is a part of a much larger stratigraphic study being prepared for a resource appraisal of the Devonian black shale sequence of the Appalachian basin. The appraisal is being prepared in cooperation with the Eastern Gas Shale Project of the U. S. Department of Energy's Morgantown Energy Technology Center.

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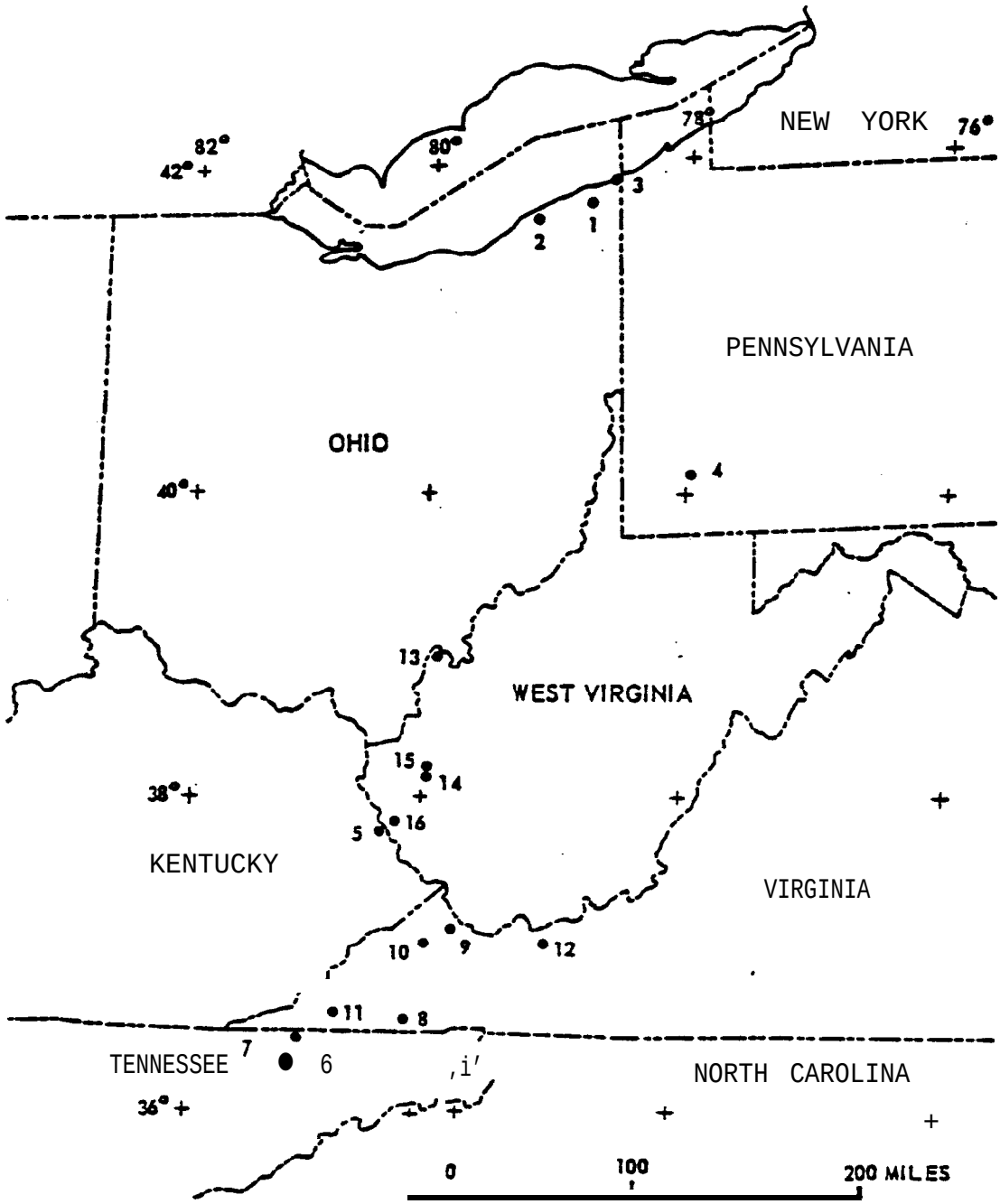

EXPLANATION

• 14 — Ash-bed locality listed in Table 1

Figure 1.— Index map showing ash-bed localities.

Table 1.--Stratigraphic poeition and location of Devonian aeh beds in the Appalachian basin.

[More than one ash bed at a locality noted by number and letter. N. A., not applicable for surface localities. For eurface sections, interval above baae refers to interval above lowermost expoeed bed of black shale. Stratigraphic nomenclature is that of local usage and regional equivalents)

Locality number	Depth below surface (ft)	Interval above base of Devonian black shale (ft)	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Local usage	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Regional equivalents	Stratigraphic unite: Volcanic aeh bed	Locality description
la	1177	289	Olentangy Shale of Ohio.	Pipe Creek Shale Hember of Java Formation of New York.	Center Hill Bentoni te Bed	International Salt Co., Fred C. Gerald No. 1 well. 2,454,200 E., 796,800 N. (north zone, Ohio Coordinate System), Saybrooke Twp., Aehtabula County, Ohio.
lb	1319	147	Olentangy Shale of Ohio.	Rhineetreet Shale Member of West Falls Formation of New York.	Belpre Bentonite Bed (Collins, 1979)	Do.
2a	1369.2	246.8	Olentangy Shale of Ohio.	Pipe Creek Shale Member of Java Formation of New York.	Center Hill Bentoni te Bed	Diamond Alkali No.201 well. 2,338,560 E., 728,530 N. (north zone, Ohio Coordinate Syetem), Lot 18, Concord Twp., Lake County, Ohio.
2b	1419	170	Olentangy Shale of Ohio.	Rhinestreet Shale Member of West Falls Formation of New York.	Belpre Bentonite Bed	Do.

Table 1.--Continued

Locality number	Depth below surface (ft)	Interval above base of Devonian black shale (ft)	Stratigraphic units: Formation and(or) member enclosing volcanic aeh bed: Local usage	Stratigraphic units: Formation and(or) member enclosing volcanic aeh bed: Regional equivalent6	Stratigraphic units: Volcanic ash bed	Locality description
3a	982.2	381.6	Olentangy Shale of Ohio.	Pipe Creek Shale Member of Java Formation of New York.	Center Hill Bentonite Bed	Thurlow Weed and Associates, Bessemer and Lake Erie RR No. 1 Well. 6,500 ft S. of lat 41°57'30" N., 2900 ft W. of long 80°32'30" W., Conneaut Twp., Conneaut quad., Ashtabula County, Ohio
3b	1192.3	171.5	Olentangy Shale of Ohio.	Rhinestreet Shale Member of West Falls Formation of New York.	Belpre Bentonite Bed	Do.
4a	7180	536	Harrell Formation of Pennsylvanian.	Genesee Formation of New York.	Unnamed	Snee and Eberly, T. J. Koben No. 1 well. 26,650 ft S. of lat 40°10' N., 4,100 ft W. of long 79°55' W., East Pike Run Twp., Washington County, Pa.
4b	7716	0	Marcellue Shale	Marcellue Shale	Tioga Bentonite Bed	Do.
5	3386. l-3386.2	20	Olentangy Shale of Ohio	Rhineetreet Shale Member of West Falls Formation of New York.	Belpre Bentonite Bed	Columbia Gas Transmission Corp., No. 20336 well. 2750 FNL; 1650 FWL Sec. 16-P-85 (Carter Coordinate System) Kermit 7 1/2-min. quad., Martin County, Ky.

Table 1.--Contfnued

Local1 ty number	Depth below surf ace (ft)	Interval above base of Devonian black shale (ft)	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Local ueage	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Regional equivalents	Stratigraphic unite: Volcanic aeh bed	Locality description
6	N. A.	30	Chattanooga Shale of eastern Tennessee.	Rhineetreet Shale Member of West Fall Formation of New York.	Belpre Bentoni te Bed	Section exposed at Little War Gap along Tennessee Route 70 near crest of Clinch Mtn., Hawkins County, Tenn.
7	676	66	Chattanooga Shale of eastern Tennessee.	Java Formation of New York.	Center Hill Bentonite Bed	Tennessee Division o f Geology-U.S. Department of Energy No. 3 corehole. 803,150 N., 2,836,050 E. (Tennessee Coordinate System), Sneedville 7 1/2-min. quad., Hancock County, Tenn.
8a	6182-6184	606	Chattanooga Shale	Lower part of Huron Member of Ohio Shale of Ohio.	Unnamed	Tidewater-Wolf 's Head, Ed Smith No. 1 well. 6,400 ft S. of lat 36°40' N., 4,500 ft E. of long 82°20' W. Mendota 7 1/2-min. quad., Fulkereon District, Scott County, Va.
8b	6250-6252	438	Chattanooga Shale	Pipe Creek Shale Member of Java Formation of New York.	Center Hill Bentonite Bed	DO.
8c	6668-6670	20	Chattanooga Shale	Rhines treet Shale Member of West Falls Formation of New York.	Belpre Bentoni te Bed	Do.

Table 1.--Continued

Locality number	Depth below surf ace (ft)	Interval above base of Devonian black shale (ft)	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Local usage	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Regional equivalents	Stratigraphic unite: Volcanic ash bed	Locality description
9	6645-6647	486	Chattanooga Shale.	Lower part of Huron Member of Ohio Shale of Ohio.	Unnamed	United Producing Company, Inc., C. L. Ritter Company No. l-1527 well. 3,000 ft S. of lat 37°15' N., 9,500 ft W. of long 81°55' W., Buchanan County, Va.
10a	6078-6130	280	Chattanooga Shale.	Pipe Creek Shale. Member of Java Formation of New York.	Center Hill Bentoni te	Columbia Gae Transmioeion Company, J. W. Pobet No. 9722T well. 450 ft S. of lat 37°10'00" N., 4,900 W of long 82°07'30" W., Prater 7 1/2-min. quad., Buchanan County, Va.
10b	6244-6247	163	Chattanooga Shale.	West Falls Formation of New York.	Unnamed	Do.
10c	6375-6378	32	Chattanooga Shale.	Rhineetreet Shale Member of West Falls Formation of New York.	Belpre Bentonite Bed	Do.
11	N. A.	100	Lower black ehale member of Chattanooga Shale.	Rhineetreet Shale Member of Weet Falls Formation of New York.	Belpre Bentonite Bed	Surface expoeure on Red Hill anticline, 3,000 ft due E. of BM 1376 in Pattoneville, Duffield 7 1/2-min. quad., Scott County, Va.

Table 1.--Continued

Locality number	Depth below surface (ft)	Interval above baee of Devonian black ehale (ft)	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Local usage	Stratigraphic unite: Formation and(or) member enclosing volcanic aeh bed: Regional equivalents	Stratigraphic unite: Volcanic ash bed	Locality description
12	N. A.	200+	Chattanooga Shale.	Rhineetreet Shale Member of Weet Falls Formation of New York.	Belpre Bentonita Bed	Surface expoeure on old U.S. Highway 23, south of Bastion, Bland County, Va. 10.5 ml N. lat 37°00' N., 8.5 mi W. long 81°00' W.
13a	3140-3140.1	254.9	Brallier Formation.	Olentangy Shale of Ohio. Pipe Creek Shale Member of Java Formation of New York.	Center Hill Bentonite Bed	Reel Energy, Inc., D/K Farm No. 3 well. lat 38°55'30" N., long 82°03'45" W. Cheshire 7 1/2 min. quad., Robinson District, Mason County, W. Va.
13b	3363.3	31.7	Brallier Formation.	Olentangy Shale of Ohio. Rhineetreet Shale Member of West Falls Formation of New York	Belpre Bentonite Bed	DO.
14	3950	27	Brallier Formation.	Rhineetreet Shale Member of Weet Falls Formation of New York.	Belpre Bentonite Bed	Columbia Gas Tranemieeion Corp., No. 20402 well. 4.83 mi S. of lat 38°10'00" N., 3.94 ml W. of long 82°10'10" W., Lincoln County, W. Va.

Table 1.--Continued

Locality Number	Depth below surface (ft)	Interval above base of Devonian black shale (ft)	Stratigraphic Unite: Formation and(or) member enclosing volcanic aeh bed: Local ueage	Stratigraphic Unite: Formation and(or) member enclosing volcanic aeh bed: Regional equivalents	Stratigraphic Unite: Volcanic aeh bed	Locality description
15	4014.25-4014.5	30.5	Brallirr Formation.	Rhinestreet Shale Member of West Falls Formation of New York.	Belpra Bentonite Bed	Columbia Gas Transmission Corp., No. 20403 well. 4.5 mi S. of let 38°10'00" N., 3.1 ml W. of long 82°10'00" W., Lincoln County, W. Va.
16	?	35+	Brallier Formation.	Rhineetreet Shale Member of West Falls Formation of New York.	Belpre Bentonite Bed	United Fuel Gas Co., Caldwell No. 42/6181 well. Sec. 7-Q-86 (Carter Coordinate Syetem), Wayne County, W.Va.

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