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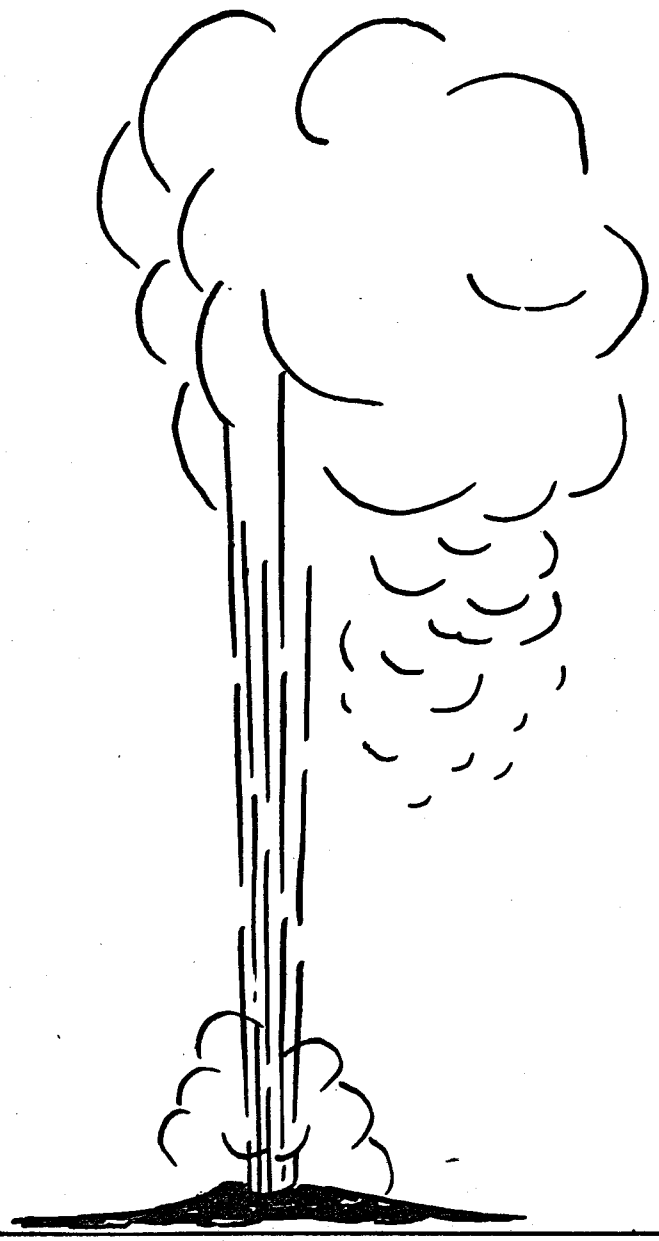


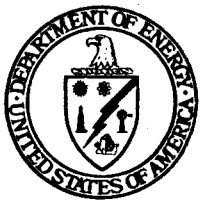
EVALUATION AND TARGETING OF GEOTHERMAL ENERGY RESOURCES IN THE SOUTHEASTERN UNITED STATES

Progress Report, October 1, 1978—March 30, 1979

By
John K. Costain
Lynn Glover III
A. Krishna Sinha

Work Performed Under Contract No. ET-78-C-05-5648

Virginia Polytechnic Institute and State University
Blacksburg, Virginia



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John K. Costain, Lynn Glover III, and A. Krishna Sinha

Principal Investigators

Department of Geological Sciences

Virginia Polytechnic Institute and State University

Blacksburg, VA 24061

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PREPARED FOR THE U. S. DEPARTMENT OF ENERGY UNDER

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Lithologic Analysis of Sediment Samples from the Intermediate Drilling Program

Michael Svetlichny

During the period October 1, 1978 - March 15, 1979, 32 holes were completed as part of the Atlantic Coastal Plain drilling program. In each of the 300 m deep holes, drill cuttings were collected at 3.0 m intervals and sealed in airtight plastic bags to prevent sediments from drying out.

At least two attempts were made to recover core in each hole. A minimum of 15 m was cored. Recovery of unconsolidated, clean sand frequently was poor because material tends to be washed away by the coring process, and sediments were not always retained in the core barrel by the core catcher. In an effort to maximize core recovery and minimize drilling costs, one coring interval was selected to be within a thick (↑15 m) sequence of clayey, silty, or consolidated sediments, and the other coring attempt was made near the maximum depth of 300 m. Detailed analyses of the cores has begun, but there are no results to report as yet.

Lithologic descriptions of the drill cuttings have been completed for each hole; the results are presented as a table following this text. The descriptions are based on Folk's (1974) classification. Each category reflects the proportion of gravel, sand, and silt plus clay in that sample. In cases where well-sorted gravel was present, a distinction was made between granules, pebbles, and cobbles. Similarly, the sand fraction was subdivided into very fine, fine, medium, coarse, and very coarse sand. If silt and clay occurred in equal proportion, they were collectively referred to as mud. Whole and fragmented macrofossils were reported as shells.

Selected samples from each hole are being wet sieved with a number 230 U.S. standard sieve to determine the proportion of sediment that is finer than 4.0 phi. This work began recently so that the data set is incomplete. The results to date are included in the table that follows this text.

ACKNOWLEDGEMENT

The following Gruy Federal Personnel assisted in sample descriptions and sieving: Kenneth Hurst, Ronald Herzick, Paul Caprio, Michael Hoffman, and Donald Hostvedt.

NO. 46 Salisbury, off Zion Road, MD

INTERVAL (METERS)	FORMATION-AGE	DESCRIPTION	COMMENTS	SAMPLES SIEVED	RATIO COARSE/FINE	PERCENT FINES
0-39.6		Very fine-fine clean sand with quartz gravel				
39.6-45.7		Silty fine sand with gravel, slightly glauconitic				
45.7-57.9		Fine sand				
57.9-67.1		Very fine-medium sand with gravel	Some coarse sand and silt near end of interval			
67.1-76.2		Fine sand				
76.2-100.6		Fine-medium sand, slightly glauconitic				
100.6-103.6		Silty medium-coarse sand				
103.6-112.8		Very fine-medium sand, slightly glauconitic	Some clay near bottom of interval			
112.8-115.8		Very fine-coarse sand with gravel	Shells			
115.8-125.0		Silty fine sand with some gravel and coarse sand. Glauconitic				
125.0-131.1		Silty clay with some sand and gravel. Glauconitic				
131.1-152.4		Silty fine sand with coarse sand and gravel	Shells			
152.4-155.4		Silty clay with sand and gravel				
155.4-171.0		Fine-coarse sand with gravel	Minor shells			
171.0-176.8		Silty fine grey	Shells			

	sand with some coarse sand. Glauconitic	
176.8-132.9	Granular muddy sand	
182.9-189.0	Very fine-fine sand with some coarse sand	
189.0-222.5	Fine sandy limy clay, slightly glauconitic	Becoming more gravelly and shelly toward end of interval
222.5-231.6	Cored	Recovery from 224.9-230.1
231.6-240.8	Very fine-fine limy sand. Glauconitic	Minor shells
240.8-243.8	Sandy clay, slightly glauconitic	Shells
243.8-246.9	Slightly granular fine-very fine limy sand. Glauconitic	Shells
246.9-259.1	Silty fine sand with gravel	Shells
259.1-271.3	Fine sandy clay grading into silty fine sand	
271.3-289.6	Silty fine sand with gravel	
289.6-294.4	Silty fine sand	
294.4-305.0	Cored	Recovery from 294.4-298.6