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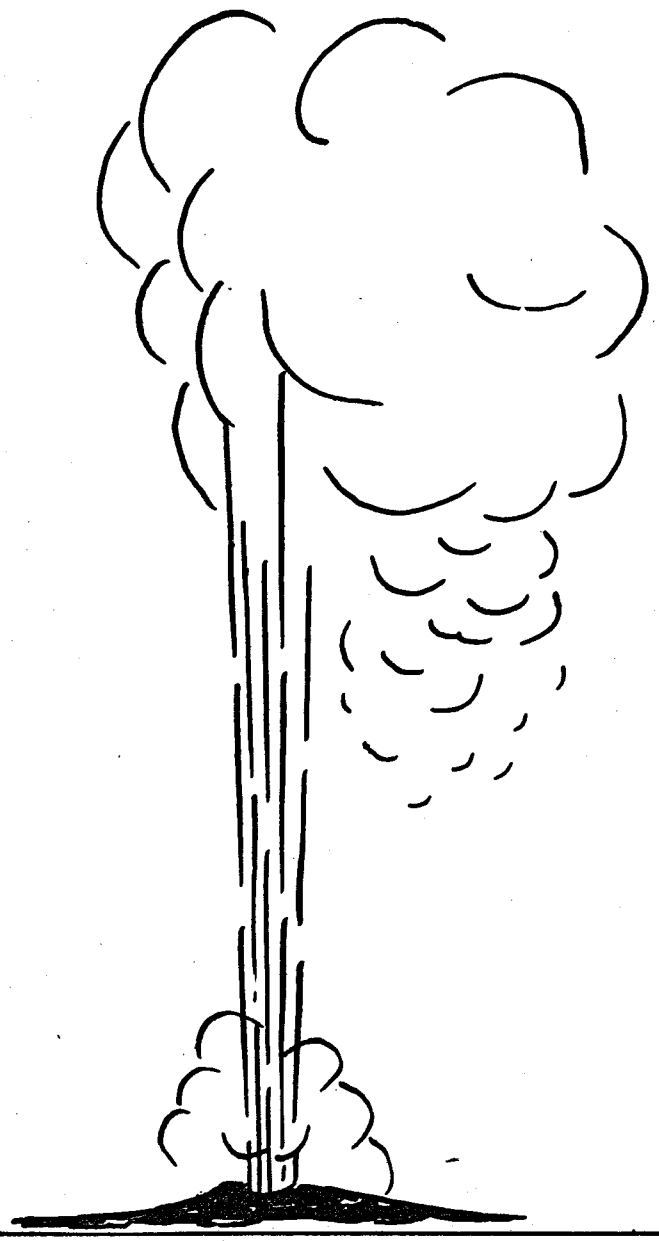


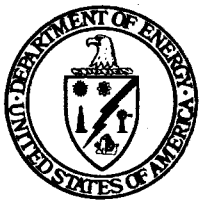
EVALUATION AND TARGETING OF GEOTHERMAL ENERGY RESOURCES IN THE SOUTHEASTERN UNITED STATES

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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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. 31C Salisbury, MD

INTERVAL (METERS)	FORMATION-AGE	DESCRIPTION	COMMENTS	SAMPLES SIEVED	RATIO COARSE/FINE	PERCENT FINES
0-36.6			No samples			
36.6-51.8		Medium-coarse sand		48.8-51.8	25.13	3.83
51.8-57.9		Medium-coarse glauconitic sand				
57.9-64.0		Medium-coarse sand				
64.0-91.4		Fine-medium sand	Shells	73.2-76.2	9.73	9.32
91.4-97.5		Silty fine sand	Shells	94.5-97.5	3.59	21.80
97.5-100.6		Very fine sandy silt	Shells			
100.6-112.8		Fine-medium sand	Shells	106.7-109.7	12.51	7.40
112.8-131.1		Fine-medium glauconitic sand	Shells	115.8-118.9	7.57	11.67
131.1-134.1		Medium-coarse sand		131.1-134.1	16.09	5.85
134.1-158.5		Fine-medium glauconitic sand	Shells	140.2-143.3	12.59	7.36
158.5-185.9		Fine-medium sand	Shells			
185.9-198.1		Fine-coarse sand	Shells	189.0-192.0	14.34	6.52
198.1-253.0		Fine-medium sand	Minor shells. Core recovery from 222.8-228.0	198.1-201.2 222.5-225.6 234.7-237.7 246.9-249.9	6.19 13.66 12.19 8.95	13.91 6.82 7.58 10.05
253.0-271.9		Slightly glauconitic fine sand		268.2-271.3	5.20	16.12
271.9-274.9		Sandy silt with friable sandstone fragments				
274.9-289.6		Silty fine sand with friable sandstone fragments		274.3-277.4 280.4-283.5	4.24 1.82	19.07 35.51
289.6-292.6		Silty sand		289.6-292.6	3.97	20.14

292.6–297.2	Clay		295.7–198.7	0.37	72.94
297.2–304.8	Cored	Recovery from 297.2–304.8			