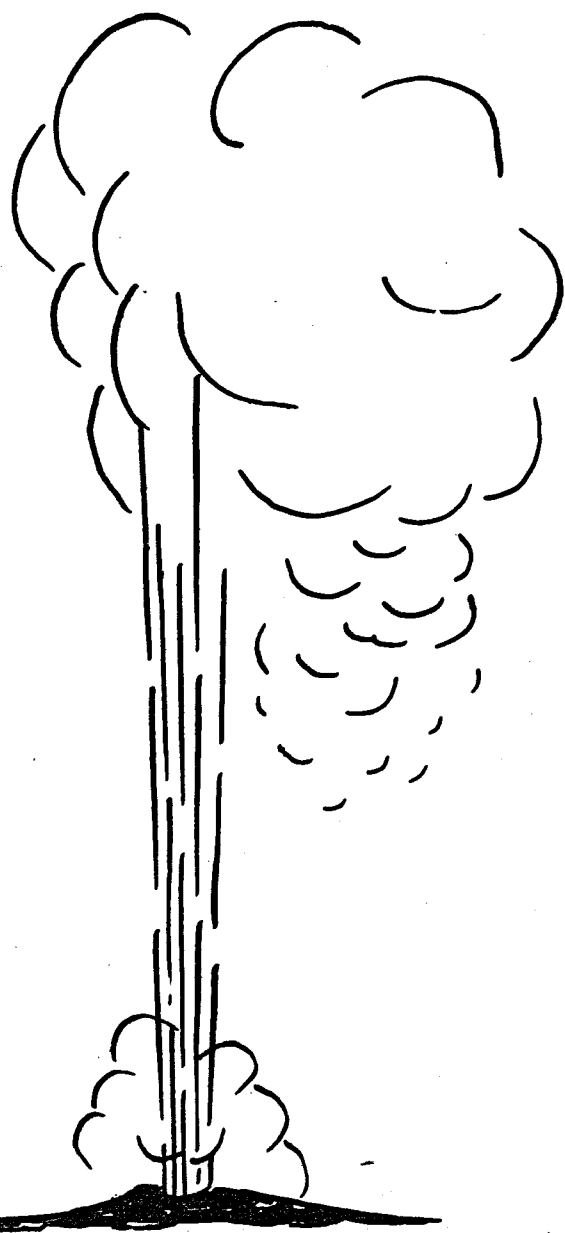


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**EVALUATION AND TARGETING OF GEOTHERMAL  
ENERGY RESOURCES IN THE SOUTHEASTERN  
UNITED STATES**

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



**U. S. DEPARTMENT OF ENERGY  
Geothermal Energy**

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IN THE SOUTHEASTERN UNITED STATES

Progress Report

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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. 25 Portsmouth, VA

INTERVAL (METERS)	FORMATION-AGE	DESCRIPTION	COMMENTS	SAMPLES SIEVED	RATIO COARSE/FINE	PERCENT FINES
3.0-6.1		Fine to medium light sand				
6.1-27.4		Silty light sand				
27.4-30.5		Fine to medium grey sand				
30.5-39.6		Silty light sand				
39.6-57.9		Fine to medium sand				
57.9-61.0		Fine sandy silt				
61.0-64.0		Silty-fine light sand				
64.0-73.2		Fine to medium light sand				
73.2-88.4		Very fine to medium sand				
88.4-94.5		Silty, very fine light sand				
94.5-97.5		Very fine to fine grey sand				
97.5-103.6		Sandy grey silt				
103.6-112.8		Silty fine-medium light sand				
112.8-115.8		Fine-medium light sand				
115.8-118.9		Fine grey sand				
118.9-131.1		Fine-medium light sand				
131.1-134.1		Light muddy silt				
134.1-140.2		Very fine to fine light sand				
140.2-182.9		Fine to medium glaucousitic sand				

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182.9-192.0	Fine to medium grey sand
192.0-210.3	Fine to medium glauconitic sand
210.3-216.4	Fine to medium sandy silt
216.4-219.5	Fine to medium light sand
219.5-222.5	Sandy silt
222.5-228.6	Fine to medium light sand
228.6-231.6	Light sandy silt
231.6-271.3	Fine to medium glauconitic sand
271.3-295.7	Medium to coarse glauconitic sand
295.7-310.9	Two coring attempts. Recoveries from 297.2-298.1 and 299.3-302.7

NO. 25A Portsmouth, VA

INTERVAL (METERS)	FORMATION-AGE	DESCRIPTION	COMMENTS	SAMPLES SIEVED	RATIO COARSE/FINE	PERCENT FINES
0-91.4			No samples			
91.4-131.1		Clay				
131.1-182.9		Limy glauconitic clay	Minor shells			
182.9-189.0		Glauconitic clay	Minor shells			
189.0-192.1		Fine sand and limy clay	Shells			
192.0-216.4		Limy glauconitic clay	Shells			
216.4-277.4		Fine sand and limy mud with some gravel.	Minor shells			
277.4-280.0		Slightly granular glauconitic limy clay				
280.0-286.5		Limy muddy fine to medium glauconitic sand with some gravel.				
286.5-289.6		Clay				
289.6-291.6		Limy muddy, fine to medium sand with some gravel.	Minor shells			
291.6-301.8		Clay fine to medium sand with some gravel	Minor shells			
301.8-307.8		Fine sandy limy clay with some gravel	Minor shells			
307.8-310.8		Limy sandy clay with some gravel.				
310.9-317.0		Fine sandy clay				
317.0-323.1		Limy clay with some fine glauconitic sand and gravel				
323.1-329.2		Slightly limy clay				

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	and glauconitic fine sand	
329.2-332.2	Limy clay	
332.2-368.8	Slightly limy fine sandy clay	
368.8-374.9	Fine sandy limy clay	
374.9-378.0	Silty limy clay	Minor shells
378.0-381.0	Fine sandy limy clay	Minor shells
381.0-387.1	Slightly limy fine sandy clay with some gravel	
387.1-396.2	Limy clay	
396.2-405.4	Silty fine sandy clay with some gravel	399.3-402.3 Missing
405.4-408.4	Glauconitic clay	Shells
408.4-411.5	Limy clayey fine sand	Minor shells
411.5-423.7	Silty clay with some gravel	420.6-423.7 Missing
423.7-426.7	Muddy fine to very coarse sand	
426.7-435.9	Limy clay	
435.9-438.9	Glauconitic limy clay	
438.9-448.1	Slightly glauconitic limy clay	
448.1-457.2	Muddy fine to coarse sand	
457.2-475.5	Silty fine sand with some gravel	
475.5-478.5	Limy clay	
478.5-481.6	Clay	
481.6-493.8	Fine to medium	