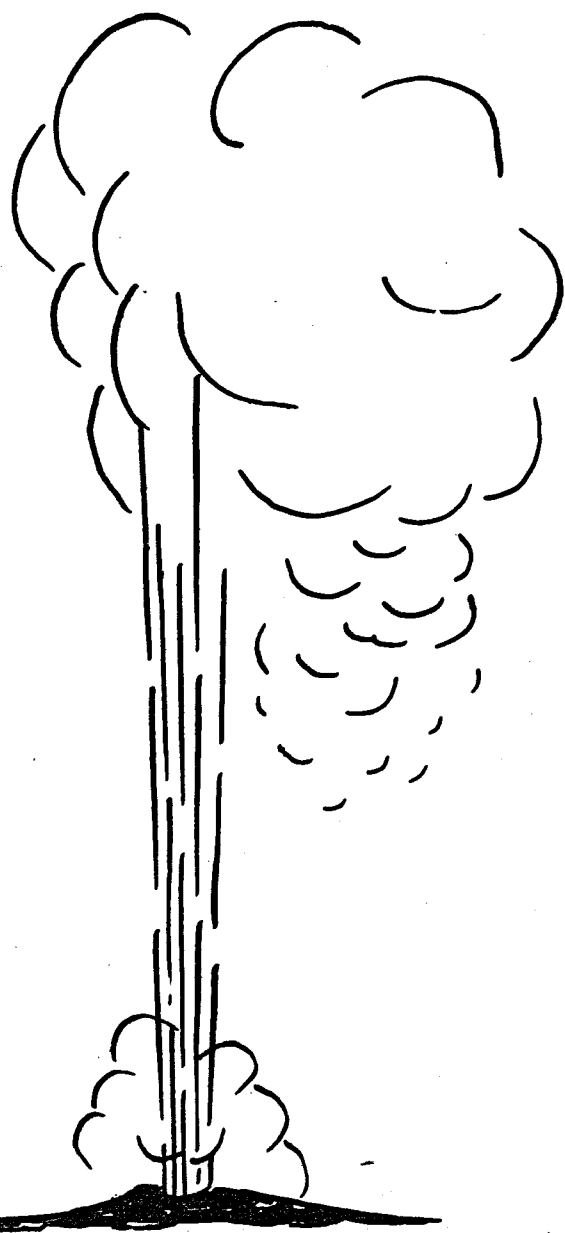


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VPI-SU-5648-5



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

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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. 36 Cape May, NJ

| INTERVAL<br>(METERS) | FORMATION-AGE | DESCRIPTION  | COMMENTS   | SAMPLES SIEVED | RATIO<br>COARSE/FINE | PERCENT<br>FINES |
|----------------------|---------------|--|--|----------------|----------------------|------------------|
| 0-45.7               |               |  | No samples                                       |                |                      |                  |
| 45.7-61.0            |               | Silty coarse sand<br>with some granules<br>and pebbles                 |  |                |                      |                  |
| 61.0-64.0            |               |  | No samples                                       |                |                      |                  |
| 64.0-73.2            |               | Silty coarse sand<br>with some granules<br>and pebbles                 |  |                |                      |                  |
| 73.2-82.3            |               | Granules - pebbles   |  |                |                      |                  |
| 82.3-97.5            |               |  | No samples                                       |                |                      |                  |
| 97.5-106.7           |               | Granules - pebbles   |  |                |                      |                  |
| 106.7-112.8          |               | Granular-pebbly<br>medium-coarse sand                                  |  |                |                      |                  |
| 112.8-125.0          |               |  | No samples                                       |                |                      |                  |
| 125.0-131.1          |               | Granular grey silty<br>sand with some pebbles                          |  |                |                      |                  |
| 131.1-149.4          |               | Grey silty fine-<br>medium sand with<br>some pebbles and<br>shell hash | Core recovery from<br>139.3-144.8                |                |                      |                  |
| 149.4-158.5          |               | Fine-medium sand,<br>slightly silty                                    | Shells   |                |                      |                  |
| 158.5-304.8          |               |  | No samples. Core<br>recovery from<br>303.0-306.6 |                |                      |                  |

DELAWARE

NO. 54 Bridgeville, DE

| INTERVAL<br>(METERS) | FORMATION-AGE | DESCRIPTION                       | COMMENTS                                     | SAMPLES SIEVED | RATIO<br>COARSE/FINES | PERCENT<br>FINES |
|----------------------|---------------|-----------------------------------|--|----------------|-----------------------|------------------|
| 0-3.0                |               | Fine to very coarse<br>clean sand |  |                |                       |                  |
| 3.0-24.4             |               | Coarse sandy clay                 | Becomes more sandy<br>toward end of interval |                |                       |                  |

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|             |   |   |
|-------------|---|---|
| 24.4-27.4   | Grey silty fine - coarse sand             |   |
| 27.4-36.6   | Very fine-coarse clean sand               |   |
| 36.6-57.9   | Muddy fine sand                           | Becomes less sandy toward end of interval     |
| 57.9-70.1   | Fine sandy clay                           | Shells  |
| 70.1-73.2   | Muddy sand                                | Abundant shells                               |
| 73.2-106.7  | Grey limy clay with gravel                | Abundant shells                               |
| 106.7-109.7 |   | No samples                                    |
| 109.7-125.0 | Limy clay with gravel                     | Abundant shells                               |
| 125.0-164.6 | Limy clay with gravel                     | Abundant shells                               |
| 164.6-179.8 | Cored                                     | Recoveries from 164.6-167.0 and 172.2-179.5   |
| 179.8-185.9 | Muddy sand with minor gravel              | Shells  |
| 185.9-295.7 | Fine sand and limy clay with minor gravel | Minor shells. Highly calcareous below 277.6 m |
| 295.7-298.4 | Cored                                     | Recovery from 295.7-298.4                     |