

UGR #356  
Cliffs Minerals Inc.  
November 10, 1978

**UGR FILE # 356**

CLIFFS MINERALS, INC.  
EASTERN GAS SHALES PROJECT  
WEST VIRGINIA WELL #7

REPORT OF FIELD OPERATIONS

Phase I

U.S. DEPARTMENT OF ENERGY  
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION  
ENERGY CENTER  
CLIFFS MINERALS PROJECT  
P. O. BOX 300  
MORCANTOWN, W.VA. 26505

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WEST VIRGINIA WELL #7

REPORT OF FIELD OPERATIONS

WELL DATA

Owner: Mobay Chemical Company  
Pittsburgh, Pennsylvania

Geological Consultants to Owner: Haddad E. Brooks  
Pittsburgh, Pennsylvania

Town: New Martinsville, West Virginia

County: Wetzel

Drilling Company: Delta Drilling Company  
Tyler, Texas

Surface Drilling:

Drilling began September 22, 1978. Hole was drilled to 2,400 feet then 2,386 feet of 8-5/8" casing was set and cemented. Hole was then drilled to 6,100-foot core point at 7-7/8" diameter.

Core Point:

Core point of 6,102 feet was reached on Sunday, October 8th, and coring began Monday, October 9th.

Formations Cored:

Rhinestreet, Middlesex, Geneseo, Marcellus, top of the Onondaga

Total Depth:

Total depth of 7,025 (+) feet was reached October 21, 1978.

The coring rate was about one 60-foot round per day compared with a projected rate of 90 to 100 feet per day. Longer than average times tripping in and out of the hole appeared to be the biggest factor in the slower rate, along with some rig maintenance problems (mostly booster compressor). Inclement weather, cold and stormy, was also a contributing factor. The core has been transported to Morgantown and is stored at the Granville laboratory.

Dry hole logging was done on Thursday, October 19th, and wet hole logging on October 22nd and 23rd. Two sets of field logs were obtained. The DOE copies have been delivered and the other set is on file at Cliffs Minerals, Inc., Granville, West Virginia.

Copies of the daily reports are on file at Cliffs' Rifle office and at Granville, and are available for those who have need for them.

One split of the cuttings samples taken at 10-foot intervals for 1,000 feet above core point was returned by Cliffs for delivery to:

Ron Zelienski  
Mound Laboratory  
Fairborn, Ohio

The sampled intervals appear to be incomplete, as many could not be found.

CLIFFS MINERALS, INC.  
EASTERN GAS SHALES PROJECT  
DAILY REPORT

WELL NAME: WEST VIRGINIA WELL #7 - 10/9/78

RUN #1:

Rhinestreet Formation:

Geolograph depth: 6,102' - 6,161'

Feet cored: 59

Feet recovered: 59.52

Coring depth reached at 4:55 a.m. - 10/9/78

Coring stopped at 1:41 p.m. - 10/9/78

Core on the ground at 7:25 p.m. - 10/9/78

Core assembled, strapped, washed, logged, sampled, and boxed at 11:30 p.m. Poor quality core - some soft spots, lots of poker chips - some very fragile

RUN #2:

\_\_\_\_\_ Formation:

Geolograph depth: 6,161' - 6,220'

Feet cored: 59

Feet recovered: 60.64

Coring depth reached at 3:06 a.m. - 10/10/78

Coring stopped at 10:28 a.m. - 10/10/78

Core on surface at 3:10 p.m. - 10/10/78

Core assembled, strapped, washed, logged, sampled, and boxed at 5:30 p.m. Core slightly better quality than first run with soft spots and fragile poker chips.

RUN #3:

\_\_\_\_\_ Formation:  
Geolograph depth: 6,222' - 6,281' (Geolograph corrected 2 feet)  
Feet cored: 59  
Feet recovered: 58.81  
Coring depth reached at 10:11 p.m. - 10/10/78  
Coring stopped at 5:45 a.m. - 10/11/78  
Core on surface at 10:42 a.m. - 10/11/78  
Core assembled, strapped, washed, logged, sampled, and boxed at 12:45 p.m. Core about the same quality as Run #2; slight out-gassing in soft, darker shale rubble (2" to 4" thick bands), and in a couple of firmer, dark shale bands near the bottom.

RUN #4:

\_\_\_\_\_ Formation:  
Geolograph depth: 6,281' - 6,340'  
Feet cored: 59  
Feet recovered: 51.96  
Coring depth reached at 5:52 p.m. - 10/11/78  
Coring stopped at 12:23 a.m. - 10/12/78  
Core on the surface at 6:37 a.m. - 10/12/78  
Core assembled, strapped, washed, logged, sampled, and boxed at 9:00 a.m. Approximately 6 feet of core left in the bottom of the hole.

RUN #5:

\_\_\_\_\_ Formation:

Geolograph depth: 6,340' - 6,396'

Feet cored: 56

Feet recovered: 57.07

Coring depth reached at 1:30 p.m. - 10/12/78

Coring stopped at 8:33 p.m. - 10/12/78

Core on surface at 2:42 a.m. - 10/13/78

Core assembled, strapped, washed, logged, and sampled at 5:00 a.m.  
Core left in the core barrel trailer for examination later today by  
Dr. Dean, et al.

Six feet of core lost - mostly ground up when core bit and barrel went  
back in the hole. Core depth adjusted upward to correct depth - that  
is, bottom of core was set at 6,396 feet then measured upwards and all  
losses assigned at the top of this run.

RUN #6:

\_\_\_\_\_ Formation:

Geolograph depth: 6,396' - 6,455'

Feet cored: 59

Feet recovered: 58.85

Coring depth reached at 11:08 a.m. - 10/13/78

Coring stopped at 6:16 p.m. - 10/13/78

Core on surface at 11:36 p.m. - 10/13/78

Core assembled, strapped, washed, logged, and sampled at 1:30 a.m.  
Cold, driving rainstorm. Core left in the trays - upper half of  
core run badly poked chipped, black shale. A. Walker did not take  
samples from this section because he could not find large enough  
solid pieces. He took only three samples from lower part of the  
core.

RUN #7:

\_\_\_\_\_ Formation

Geolograph depth: 6,455' - 6,514'

Feet cored: 59

Feet recovered: 56.98

Coring depth reached at 7:44 a.m. - 10/14/78

Coring stopped at 3:20 p.m. - 10/14/78

Core on surface at 9:32 p.m. - 10/14/78

Core assembled, washed, strapped, logged, sampled, and boxed at 12:00 midnight. Core soft, "bisquits" and poker chips, some badly rubblized.

RUN #8:

\_\_\_\_\_ Formation

Geolograph depth: 6,514' - 6,573'

Feet cored: 59

Feet recovered: 59.4

Coring depth reached at 5:18 a.m. - 10/15/78

Coring stopped at 1:40 p.m. - 10/15/78

Core on the ground at 7:50 p.m. - 10/15/78

Core assembled, strapped, washed, logged, sampled, and boxed at 10:00 p.m. More poker chips and bisquits.

RUN #9:

\_\_\_\_\_ Formation:

Geograph depth: 6,573' - 6,611'

Feet cored: 38

Feet recovered: 32

Coring depth reached at 5:30 a.m. - 10/16/78

Coring stopped at 12:04 p.m. - 10/16/78

Core on the ground at 5:39 p.m. - 10/16/78

Core assembled, strapped, washed, logged, sampled, and boxed at 8:00 p.m. Lost 6 feet. Core badly broken, soft in spots, rubblized.

RUN #10:

Marcellus and Onondaga Formations:

Geograph depth: 6,611' - 6,635'

Feet cored: 24

Feet recovered: 23.64

Coring depth reached at 2:28 a.m. - 10/17/78

Coring stopped at 6:40 a.m. - 10/17/78

Core on the ground at 11:12 a.m. - 10/17/78

Core assembled, washed, strapped, logged, sampled, and boxed at 12:30 p.m. Reached Onondaga Formation at 6,624 feet.