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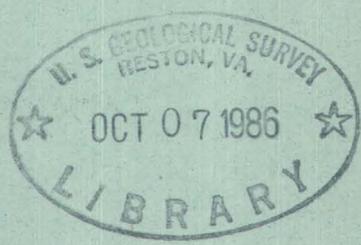
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GEOLOGICAL SURVEY
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PRELIMINARY RESULTS OF PROSPECTING
OF THE "LEACHED" ZONE OVER PHOSPHATE DEPOSITS
IN NW $\frac{1}{4}$ OF SEC. 9, T. 31 S., R. 25 E.,
POLK COUNTY, FLORIDA
by
Robert H. Stewart
FLORIDA PHOSPHATE TOPICAL REPORT NO.

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Robert H. Stewart

December 1949

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ABSTRACT

The NW $\frac{1}{4}$ Sec. 9 T. 31 S., R. 25 E. is underlain by a 4-to 15-foot thick layer of leached zone material in which the uranium content ranges from 0.001-0.018 percent. Several well defined areas of relatively high uranium content are outlined on figure 2. The International Minerals & Chemical Corporation wishes information as to the advisability of making plans for the stockpiling of this material.

INTRODUCTION

The International Minerals & Chemical Corporation has been prospecting for phosphate 5 miles south of Bartow, Florida, in the NW $\frac{1}{4}$ Sec. 9, T. 31 S., R. 25 E. Samples from all prospect holes in the area were submitted to the Geological Survey for determining the uranium content. A 4-to 15-foot thick layer of leached zone material overlies the economic phosphate pebble matrix in this area. As International Minerals & Chemicals Corporation is planning on mining this deposit early in 1951, the company is very interested in the advisability of making plans for the stockpiling of this material, which will have to be stripped to mine the underlying phosphate.

Prospecting information

Data from drill hole prospecting in this area shows that the thickness of the leached zone overlying the phosphate deposit ranges from 4 to 15 feet and averages between 7 and 8 feet. The uranium content ranges from 0.001 to 0.018 percent. The average uranium content is 0.008 percent. The silica content of this material in the form of sand is about 40 percent. Separation of the sand by a simple washing process would further increase the grade of the material.

The analyses from which the foregoing information is summarized are given in table 1. Each hole listed in the table represents about 30,000 tons of leached zone material in place.

Table 2 gives the percentages of uranium in the large pebble fraction of the economic phosphate matrix immediately below the leached zone. Tonnage figures are not available.

J. B. Cathcart of the Geological Survey estimates that the company will mine approximately 5,000 tons of the leached zone each day during a period of 15 months, or a total of 1,875,000. The uranium content of this tonnage at the average grade of 0.008 percent uranium is 150 tons.

By selectively mining the areas of higher grade rock, the grade of the product can be raised without greatly reducing the total uranium content of material stockpiled. By not mining the 18 acres with the lowest percentage of uranium, the grade of the remainder is raised from 0.008 to 0.010 percent uranium. The actual loss in uranium is 10 tons.

Figure no. 1 shows the area prospected, and the location of the prospect holes. It also shows the location of mine face sections measured by the Geological Survey on the Virginia-Carolina Chemical Corporation property which lies just north of the International Mineral & Chemical Corporation property.

Figure no. 2 is an isograde map of the prospected area showing the distribution of uranium in the leached zone. Figure no. 3 is an isograde map showing the distribution of uranium in the large pebble fraction of the economic matrix immediately below the leached zone. Study of these two maps shows a striking reverse relationship between the distribution of uranium in the two zones, where the "leached" zone is rich, the pebble beneath is relatively lean; where the leached zone is lean, the pebble beneath is rich. This strongly suggests that, where conditions were favorable, uranium has been carried downward from the "leached" zone by groundwater and has enriched the large pebble immediately beneath.

Virginia-Carolina Chemical Corporation property in the north.

The same deposit continues north beyond the area of the maps of figures 2 and 3 in the east half of the NW $\frac{1}{4}$ and SW $\frac{1}{4}$ of Section 4, T. 31 S., R. 25 E. (see fig. 1). This area of about 100 acres in extent is underlain by a comparable thickness of the "leached" zone. The Virginia-Carolina Chemical Company commenced mining in this area on October 1, 1949. At the time when this report was written, only about five acres of the tract had been mined. The "leached" zone here and to the north maintains

its average thickness of 7 to 8 feet. This information is based on mine face sections which were measured and sampled by the Geological Survey in W $\frac{1}{2}$ of NW $\frac{1}{4}$ Sec. 4 (see fig. 1). Table no. 3 shows the percentage of uranium in the "leached" zone portion of the mine face sections. There is in this area approximately 1,200,000 tons of "leached" zone material with an average uranium content of 0.013 percent. The total amount of uranium in this material would be 150 tons. Company prospecting information which the Virginia-Carolina Chemical Company has on this area is not available for use in this study. It may be possible to stockpile this material in a recently mined 80-acre tract in the W $\frac{1}{2}$ of NE $\frac{1}{4}$ of Sec. 4, T. 31 S., R. 25 E.

Table no. 1

Uranium contents of the "leached" zone

Prospect Hole no. and percent uranium

<u>Hole no.</u>	<u>Percent uranium</u>						
A-9	.009	B-9	.014	C-9	.010	D-9	.008
-10	.011	10	.006	10	.012	10	.007
11	.010	11	.002	11	.007	11	.009
12	.009	12	.008	12	.010	12	.009
13	.007	13	.007	13	.005	13	.007
14	.014	14	.007	14	.006	14	.003
15	.006	15	.012	15	.018	15	.006
16	.004	16	.001	16	.003	16	.003
E-9	.001	F-9	.002	G-9	.010	H-9	.009
10	.006	10	.015	10	.006	10	.011
11	.002	11	.016	11	.016	11	.011
12	.014	12	.011	12	.006	12	.010
13	.016	13	.006	13	.008		
14	.015	14	.006	14	.012		
15	.015	15	.007	15	.004		
16	.006	16	.002				

Table no. 2

Uranium content in large pebble fraction of matrix beneath "leached" zone

<u>Hole no.</u>	<u>Percent uranium</u>						
A-9	.015	B-9	.013	C-9	.010	D-9	.015
10	.015	10	.041	10	.008	10	.018
11	.011	11	.021	11	.012	11	.009
12	.014	12	.029	12	.016	12	.018
13	.017	13	.019	13	.014	13	.016
14	.022	14	.014	14	.016	14	.018
15	.018	15	.015	15	.018	15	.010
16	.019	16	.017	16	.010	16	.006
E-9	.019	F-9	.010	G-9	.010	H-9	.013
10	.016	10	.014	10	.013	10	.014
11	.013	11	.008	11	.013	11	.008
12	.008	12	.013	12	.015	12	.008
13	.022	13	.009	13	.008		
14	.008	14	.011	14	.013		
15	.011	15	.011	15	.010		
16	.008	16	.008				

Table no. 3

Uranium content of "leached" zone of mine face sections
in the Virginia-Carolina Chemical Company, Homeland mine.

<u>Section no.</u>	<u>Uranium</u>
2	.013
3	.011
4	.023
5	.003
6	.009
7	.013
9	.018
803	.010