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PRELIMINARY REPORT ON FELDSPAR  
OCCURRENCE ON TWIN BUTTES CORP. PROPERTY

by

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## INTRODUCTION

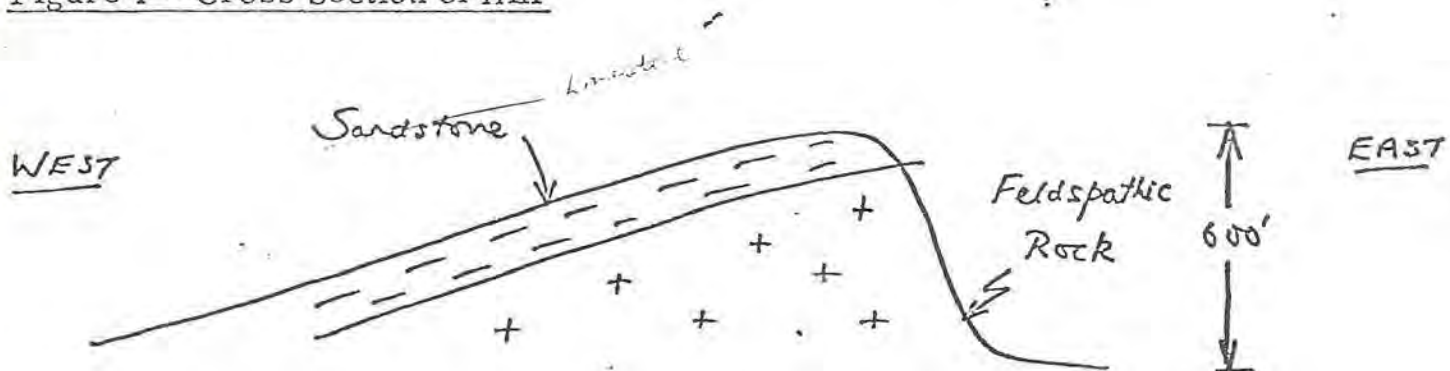
This preliminary report describes an outcrop of feldspathic rock in Albany County, Wyoming; Section 8, Township 18 North, Range 72 West.

This report is based upon observations of the writer and laboratory work by both the writer and H. M. Ochs. It should be emphasized that this is a preliminary report based upon a minimum amount of investigation.

## GEOLOGY

The area (so far investigated), is a hill approximately 600 yds. long, by 300 yds wide. For ease of description, Figure 1 is included below:

Figure 1 - Cross Section of Hill



The hill, (600' high), is capped by a hard calcareous sandstone which forms the dip slope to the west. Beneath the "cap" is the feldspathic rock, the depth of which is unknown. The feldspathic rock is of two distinct types.

(1) Red Rock - which is similar to Rocky Mountain granite, but highly feldspathic, containing about 85% orthoclase feldspar ( $\text{KAlSi}_3\text{O}_8$ ).

(2) Black Rock - which is almost entirely feldspar, and similar to anorthosite. The feldspar in this rock is andesine and is at least 90% of the rock.

These two feldspar types are present in roughly the proportions of 35% Red feldspar and 65% Black feldspar. The depth of this deposit is unknown, but the mountain itself contains approximately:

$$\left(1800 \times 900 \times \frac{500}{2} \times 60 \times 2.5 \times \frac{1}{2000}\right) \text{ tons} = 30.4 \text{ million tons}$$

#### FELDSPATHIC ROCK

(1) Red Feldspathic Rock - There is approximately 10.6 million tons of red feldspathic rock, containing 85% feldspar; this would yield: - 9 million tons of orthoclase (potash) feldspar.

(2) Black Feldspathic Rock - with 19.8 million tons of black feldspathic rock and a yield of 90%, there is: - 17.8 million tons of andesine (soda) feldspar.

These two feldspars contain approximately the same amount of alumina ( $\text{Al}_2\text{O}_3$ ) and have about the same fluxing power. However, andesine contains about 5% soda ( $\text{Na}_2\text{O}$ ) which means that it could be sold for about \$1.00 per ton more than the orthoclase feldspar.

Analysis of a hand specimen, taken on the site by the writer, is given in Table 1. Other typical feldspar analyses are provided for comparison.

It must be pointed out that this hand specimen has not been treated in any way. With a little washing, the iron ( $\text{Fe}_2\text{O}_3$ ) content could be considerably reduced.

To prepare this material, ready for sale, the rock must be crushed. It should then be water washed with possibly a slight acid treatment, screened and bagged. The screening should leave a raw material with a mesh size of 20-140 and it should contain not more than 0.2%  $\text{Fe}_2\text{O}_3$ .

When prepared, the red orthoclase should sell for \$11.00 per ton, and the black andesine for \$12.00 per ton, exclusive of transport. As an example, the nearest feldspar supply to Denver is at Bonneville, Wyoming. This feldspar sells for \$12.00 per ton and arrives, delivered in Denver for \$36.00.

### MARKET

The feldspar field is highly competitive and a big factor in sales is the cost of transport. For this reason it is very doubtful if this feldspar could be sold outside of an area from the Rockies, east to the Missouri and from southern Illinois to Texas.

Within this area, there are 21 manufacturing companies with approximately 65 operating tanks of 150 tons capacity each. Of these 65 tanks, certainly 30 (those in Texas and Oklahoma) would be very likely to buy this feldspar. Assuming that 10% of the batch is feldspar, this represents 148,500 tons of sales per year and at \$12.00 per ton, this would net \$1,782,000 sales per year. This should yield at least \$300,000 net profit per annum.

## ACTION

Two courses of action are now open: -

(1) Sell the property

(2) Develop the property

(1) To Sell the Property - With 30 million tons of fairly good quality feldspar, all well substantiated, a large mineral company could now be approached. The property should be attractive, not only because of the large supply but because it is close to a large market. With 30 million tons of feldspar, one can anticipate a total net profit of at least \$30 million over the next 30 years. This would mean that a reasonable sale price could be perhaps \$5 million.

If this approach is taken, then no further work should be necessary on the property.

(2) To Develop the Property - Due to the easy access to the mineral and the fairly high native purity, it should be possible to produce feldspar with a capital investment of about \$300,000.

However, mining the feldspar is the easiest part of the operation. To sell the feldspar will require the acquisition of an excellent and knowledgeable salesman. To build up sales to a profitable level could take up to 5 years. Before any such development could be started, at least \$5,000 would have to be invested into a study of: -

(1) The geology of the area

(2) Assessment of ore quality

(3) Estimate of mining and preparation costs

Table 1

Analysis of Twin Buttes Feldspar

	<u>Twin Buttes</u>	<u>Wyospär</u>	<u>Kona Feldspar</u>	<u>Del Monte Feldspar</u>
SiO <sub>2</sub>	65.38 (by diff)	65.8	68	72
Al <sub>2</sub> O <sub>3</sub>	21.46	18.5	19.0	16.9
CaO	7.12	0.4	2.0	2.3
MgO	0.15			
Na <sub>2</sub> O	4.73	3.5	6.0	4.7
K <sub>2</sub> O	0.67	11.5	4.6	3.7
Fe <sub>2</sub> O <sub>3</sub>	0.49	0.06	0.1	0.14