

ZIRCON SURVEY

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Introduction

Since July 1967, Mr. J. Philip Neal has been collecting and testing samples as part of a State-wide feldspar evaluation. As part of the evaluation procedure, iron-bearing or iron-stained minerals are separated as a single flotation product. In this iron product should also be the majority of any zircon present in the head sample. The zircon would tend to be concentrated along with the iron minerals, not due to iron inclusions but due to flotation conditions and reagents used.

One-hundred and four iron mineral froth products were examined under short-wave and long-wave ultraviolet light to detect the presence of zircon.

This report contains the visual results of this examination.

Sample Identification

The samples tested were iron froth products produced during feldspar evaluation testing.

For a complete and detailed description and location of each sample, refer to Mr. J. Philip Neal's reports:

"North Carolina Feldspar Evaluation Report No. 1"
(December 1967 Progress Report)

"North Carolina Feldspar Evaluation Report No. 2"
(December 1968 Progress Report)

"North Carolina Feldspar Evaluation Report No. 3"
(July 1969 Progress Report)

Procedure

Each sample supplied by Mr. Neal was spread out on a pan and examined under short-wave ultraviolet light. If the sample showed any lemon-yellow spots, it was checked under the long-wave ultraviolet light. Under the long-wave ultraviolet light, zircon shows a pink-orange color. If both tests proved positive, then the amount of zircon present was visually estimated.

The definitions used for classifying each sample was as follows:

- Major - greater than 5% zircon
- Minor - from 1 to 5% zircon
- Trace - less than 1% zircon
- None - no zircon detectable

Another classification was later created to cover samples that exhibited fluorescent characteristics other than those of zircon.

Results

The examination of one-hundred and four samples resulted in the following findings:

- 1 sample contained a major amount of zircon
- 8 samples contained a minor amount of zircon
- 41 samples contained trace amount of zircon
- 52 samples showed no fluorescence at all
- 2 samples fluoresced green under long-wave and short-wave ultraviolet light.

Table 1 contains a list of the major, minor, and odd fluorescent samples. A general location, description, North Carolina feldspar evaluation rating, and the iron-froth product percentage of head feed are also shown.

Table 2 lists Laboratory number of samples that showed only a trace of zircon.

Table 3 lists Laboratory number of samples that showed no fluorescence at all.

Remarks

With only a small number of samples showing major or minor amounts of zircon, any conclusions drawn from this work would be premature.

With the continuation of the North Carolina Feldspar Evaluation program, more samples will be tested in the future. The possibility exists that a trend may develop when more samples are examined.

For a detailed description of each sample and its location, refer to North Carolina Feldspar Evaluation Reports 1, 2, and 3, previously cited.

The odd, green fluorescent minerals observed in two samples have not been identified at this time.

Table 1

Fluorescent Samples

<u>Lab. Sample No.</u>	<u>Field Sample No.</u>	<u>County</u>	<u>Description</u>	<u>Fe Product % Weight of Head Feed</u>	<u>N.C.F.E. Rating</u>
<u>Major</u>					
3209-A	FG 39-40	Henderson	Composite, hard and soft Henderson gneiss	5.4	164
<u>Minor</u>					
1896-A	-	Cabarrus	Concord syenite, hard	13.3	235
1896-B	-	Cabarrus	Concord syenite, soft	12.8	236
3210	FG 41	Henderson	Henderson gneiss, weathered	6.5	236
3475	FG 82	McDowell	Porphyroblastic granite gneiss, weathered	8.6	280
3479	FG 86	Buncombe	Granite gneiss, weathered	1.9	134
3483	FG 90	Buncombe	Granite gneiss, weathered	0.6	107
3493	FG 92	Buncombe	Pyroxene bearing granite	23.6	252
3527	FG 98	Gaston	Saprolite, probably biotite granite	8.1	192
<u>Odd</u>					
3134-A	FG 5	Rowan	Granite, fresh	2.8	277
3341	FG 51-A	Davidson	Porph.-granite, fine grained, weathered	1.7	131

Table 2

Samples Showing Only a Trace of Fluorescence

<u>Lab. Sample No.</u>	<u>Lab. Sample No.</u>
1783	3457
1942	3458
2000	3477
3029	3478
3062	3480
3203	3481
3211	3484
3212	3487
3311	3501
3342	3506
3344	3510
3347	3525-B
3350	3526
3353	3529
3356	3530
3358	3531
3362	3532
3367	3534
3368	3541
3369	
3456	

Table 3

Sample Showing No Fluorescence

<u>Laboratory Numbers</u>		
1812-B	3349	3476
3030	3352	3482
3058	3354	3488
3129-A	3355	3510
3150	3357	3522-A
3202	3359	3523
3209-B	3361	3524
3213	3363	3525-A
3214	3364	3528
3216	3365	3538
3219-A	3366	3539
3219-B	3370	3542
3338	3444	3543
3339	3449-B	3544
3340	3450	3545
3345	3453-A	3546
3346	3453-B	
3348	3459-B	