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PRINTED: 12-23-2009

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: ANNIE LAURIE

ALTERNATE NAMES:

SANTA CRUZ COUNTY MILS NUMBER: 24A

LOCATION: TOWNSHIP 23 S RANGE 11 E SECTION 8 QUARTER SW
LATITUDE: N 31DEG 26MIN 09SEC LONGITUDE: W 111DEG 14MIN 41SEC
TOPO MAP NAME: RUBY - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
- URANIUM
- LEAD
- ZINC
- COPPER
- FELDSPAR

BIBLIOGRAPHY:

AZBM BULL. 191,"INDEX OF MINING PROP. IN SANTA CRUZ CO."
AZBM CARD INDEX SANTA CRUZ CO.
USGS BULL. 1147, P. A-39
USAEC PRELIM. REC. REPORTS USGS PRR 3/6/51
ADMMR ARIZONA INDUSTRIAL MINERALS, P. 57
ABM BULL 180, P. 353 - BULL 191, P.62
DMR - FLUORSPAR, P. 36
ADMMR ANNIE LAURIE FILE
DOE - RMO 589 -677 - 679 - ANNIE LAURIE PROSPECT, SANTA CRUZ COUNTY ARIZONA (MICROFICHE)
ORO BLANCO MINING DIST. THESIS, BY DR. LOUIS H. KNIGHT JR. 1970
ECONOMOIC GEOLOGY. V. 50, NO. 2,1955, P.227

ANNIE LAURIE CLAIMS

SANTA CRUZ COUNTY
ORO BLANCO DIST.
T23S R11E Sec. 8

RMO 590 - AEC file
RMO 677 in AEC file
RMO 679

AEC 172-489

USGS Bull. 1147-A p. A39

Structure & Mineralization of the Oro Blanco Mining District, by Dr. Louis H. Knight, Jr. 1970 Geology file

DMR - Fluorspar p. 36

ABM Bull. 180, p. 353

ABM Bull 191, p. 62, T23S, R11E, Sec. SW 1/4 8

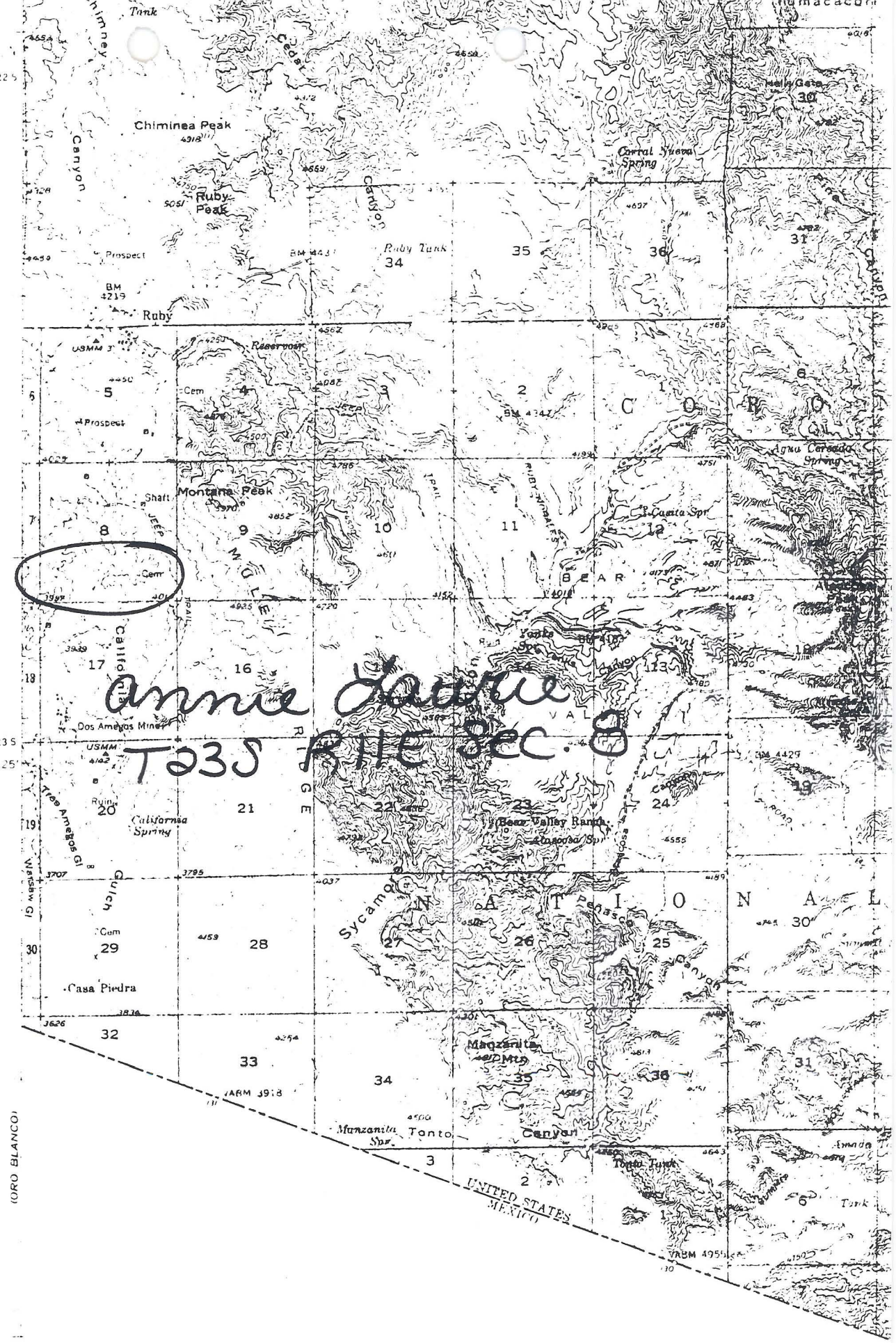
Anderson, Roger Y., and Kurtz, Edwin B., Bio Geochemical reconnaiasance of the Annie Laurie Uranium Prospect, Santa Cruz County, Arizona; Economic Geology, V 50 No. 2 March-April 1955. p227

ADMR AZ Industiral Minerals p. 57

Ruby 15' Topo (included in file)

Santa Cruz County Index MILS #24A

need to add refer. to computer. OK


Chiminea Peak
Ruby Peak
Ruby
Ruby Tank
Corral Nueva Spring
Montana Peak
Agua Cercada Spring
Bear Valley Ranch
Casa Piedra
Manzanita Mtn
Manzanita Spr.
Tonto Canyon
Tonto Tank
California Spring
Dos Amigos Mines
UNITED STATES
MEXICO
(ORO BLANCO)
Annie Laurie
T23S R11E Sec. 8

Ruby 15'

ANNIE LAURIE CLAIMS

SANTA CRUZ
T23S R11E Sec. 8 SW$\frac{1}{4}$

John H. Bright, deceased, purchased the Ruby patented lode mining claim about 1955 and then located the Annie Laurie lode claim over part of the Ruby claim, to include any extension of a small occurrence of uranium ore reported to contain pitchblende. Found the location and small workings, which is on the northerly end of a zone containing three exposures of uranium ores, perhaps over one mile distance. VBD WR 1/15/76

NAME: ANNIE LAURIE (claims) COUNTY Santa Cruz

T23S R11E SEC. 8, SW1/4 DISTRICT: Oro Blanco

3 mi S. of Ruby

Mineralization: U, Cu, Pb, Zn — Pitchblende sandy U minls, Co, gl, Sf slfds in gr, shr frac, stg altn, purple fluorite

Geology: qtz-sulfide vn Fissure zone Jd. tuff rhyolite - ss, slst

Type Operation:

Production:

References: AEC microfilm
USGS Bull. 1147-A p. A-39 - A42, 1962
Anderson & Kurtz, Jr. 1955, p. 227 - 232

Cy 2 CF

UNITED STATES ATOMIC ENERGY COMMISSION

RMO-677

ANNIE LAURIE PROSPECT, SANTA CRUZ COUNTY, ARIZONA

By
Robert J. Wright

RMO-677

January 1951

Division of Raw Materials
Exploration Branch

Technical Information Service, Oak Ridge, Tennessee

U. S. ATOMIC ENERGY COMMISSION

ABSTRACT

Pitchblende occurs within sheared and mineralized porphyritic flow rock at the Annie Laurie prospect near Ruby, Arizona. Accompanying minerals include sphalerite, pyrite, galena, chalcopyrite, and fluorite in a carbonate gangue.

The area of uranium mineralization has been outlined by sampling based upon a radiometric survey.

INTRODUCTION

The Annie Laurie uranium prospect, in the Oro Blanco district of southern Arizona, is in the southwest quarter of Sec. 8, T. 23 S., R. 11 E. The nearest post office is Nogales, about 25 miles to the east, and the nearest settlement is Ruby, a nearly abandoned mining camp about 3 miles to the north. Access to the Ruby area is by gravel road from U. S. Highway 89 at Kinsley or Nogales. The U. S. Geol. Surv. Ruby Quadrangle topographic sheet, published in 1940, embraces the area surrounding the prospect.

The prospect is owned by Mr. John H. Bright, Jr., 3914 South United States Avenue, Tucson, Arizona, and the writer is indebted to Mr. Bright for his complete cooperation during the progress of this study. The ore minerals and rock types were identified through the kindness of Mr. LaMar Evans, mineralogist, U. S. Bureau of Mines Experimental Station, Tucson, Arizona. Uranium analyses were made by the Bureau of Mines laboratory.

HISTORY

Mineralization in the Oro Blanco district is widespread, and prospects and mines are numerous. The dominant metal producer of the area has been the Montana mine at Ruby, which from 1935 to 1939 was the largest single source of lead and zinc in the state [1]. Mining activities there were suspended in May 1940 as reserves became exhausted. Since 1940, only scattered production has come from various small mines.

Radioactivity on the Annie Laurie prospect was first discovered during a Geiger counter reconnaissance of the area by Mr. John H. Bright, Jr., in the summer of 1949. The radioactive material was part of a calcareous travertine spring deposit near the floor of a arroyo tributary to California Gulch. Excavation revealed that the limestone underlying the spring deposit had only normal radioactivity. Mr. Bright then prospected the hill slope above, and with the aid of the counter located an area of abnormally high radioactivity where he dug two small test pits, A and B (Plate I). Pit A reached a depth of about 6 feet and exposed pitchblende-bearing silicified flow rock. Pit B, somewhat shallower, did not contain pitchblende.

The discoveries were made on the patented Ruby claim which appears to have been located originally on the basis of sparse sulphide mineralization explored by an adit, now flooded. Mr. Bright

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1. Minerals Yearbook, U. S. Bureau of Mines, 1940, p. 212.

purchased the Ruby claim and renamed it the Annie Laurie. A contiguous claim adjoining the Annie Laurie to the west was staked and is now held by location.

GENERAL GEOLOGY

The deposit lies within a series of volcanic and sedimentary rocks which is probably part of the Tertiary volcanic succession described by Darton [2]. California Gulch and its tributaries are floored by various sedimentary rocks including limestone, shale, and conglomerate. Resting upon these formations, which lie nearly horizontal, is a porphyritic andesite flow which underlies the neighboring hill crests and slopes. In hand specimen the rock is seen to contain phenocrysts of white feldspar and hornblende in a dark green groundmass. Thin sections reveal that the feldspar is andesine, the hornblende is largely altered to chlorite, and that the rock also contains sporadic phenocrysts of orthoclase and magnetite. The flow may be part of the andesite that is reported to be widely distributed at the head of California Gulch [3].

The immediate host for the Annie Laurie deposits is a strongly silicified, reddish porphyritic rock with large rounded quartz phenocrysts and smaller phenocrysts of pink feldspar. Veinlets of quartz transect the rock in all directions. Under the

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2. Darton, N. H., A resume of Arizona geology: Univ. of Ariz. Bull. 119, 1915, p. 288.

3. Fowler, George M., Montana mine, Ruby (in Some Arizona Ore Deposits): Univ. of Ariz. Bull. 145, 1938, p. 120.

microscope the pink feldspar proves to be orthoclase and the matrix appears to consist primarily of very fine-grained quartz.

This quartz porphyry underlies the area sampled (Plate I). It is in contact with the sedimentary rocks which underlie the gully near the east edge of the claim. To the north and south the silicified rock is bordered by andesite. Investigation of the zone between the two rock types suggests that the contact is gradational for a short distance, but the relation between the two rocks is not clear at present. The quartz porphyry may be an intensely silicified and feldspathized andesite which has undergone destruction of its dark minerals. Alternatively, the two rocks may represent separate flows.

URANIUM MINERALIZATION

Only from pit A can unweathered mineralized rock be obtained for study. Here the silicified rock is brecciated and recemented by carbonate veinlets up to several inches wide. The veinlets contain minor fluorite, pyrite, sphalerite, galena, and chalcopyrite. Examination of the pit faces failed to reveal any controlling structural feature, nor could the margins of the mineralized zone be definitely outlined.

The primary uranium-bearing mineral is pitchblende. It is largely confined to the host rock, within which pitchblende is found in lens-shaped zones with lengths of several inches and thicknesses of less than one inch. No pitchblende was observed within the carbonate veinlets. The pitchblende-rich zones are dark gray in color

and are margined by a zone of red coloration similar to the hematitic stains in quartzite at the Sunshine mine [4]. However, the hematitic alteration is much more weakly developed at the Annie Laurie prospect.

Under the microscope the pitchblende is seen to form small spherulitic bodies. The replacement of host rock by pitchblende has developed a texture similar to the texture of quartzite replaced by pitchblende at the Sunshine mine. In pit A, pitchblende is found within six feet of the ground surface. In comparison with most other pitchblende deposits of the western United States, this is an unusually shallow occurrence, pitchblende normally being quite soluble in slightly acid ground waters. The intimate distribution of pitchblende within the host rock and the intense silicification of the latter both contribute to the relative resistance to weathering. Secondary uranium minerals, formed within a few feet of the ground surface, include metatorbernite and several bright yellow uranium minerals, among which uranophane has been identified.

Various selected grab samples collected by different individuals from pit A have yielded analyses up to 0.79% U_3O_8. Due to the irregularity of uranium mineralization, bulk sampling of the dump material would be required to provide a relatively accurate grade estimate.

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4. Thurlow, Ernest E. and Wright, Robert J., Uraninite in the Coeur d'Alene District, Idaho: Econ. Geol., vol. 45. 1950, p. 402.

SAMPLING AND RADIOMETRIC DATA

In the summer of 1950, a radiation survey of the area was conducted to outline the extent of possible uranium-bearing rock as a guide to sampling.

Radioactivity measurements were made with a scintillation-type counter calibrated periodically against a uranium standard. Measurements were taken with the counter suspended by its carrying strap from the operator's shoulder. Over most of the area, stations were 50 feet apart; but near pits A and B the readings were taken at 25-foot intervals. Primary control was established by alidade and tape.

The results of this survey are plotted on Plate I. Background radioactivity of the sedimentary rocks is about 70 to 80 counts per second. The silicified rock shows a wider variation, with an average background of about 90 to 100 counts per second. Against these background readings are three radioactive anomalies. One, with individual readings up to 420 counts per second, is localized by the radioactive travertine. A second, with individual readings up to 1000 counts per second, is localized near pits A and B. The radioactivity here is strengthened by the presence of dump material, and hence the readings are not representative of the unbroken ground. A third anomaly, with readings up to 120 counts per second, is 200 feet south of pits A and B.

The following Table summarizes the results of sampling.

Location	Type of Sample	$\%U_3O_8$
Pit A	6-ft. chip channel cut - south wall . . .	tr.
	5-ft. chip channel cut - west wall . . .	0.63
	3-ft. chip channel cut - north wall . . .	tr.
	1-ft. chip channel cut - west wall, gouge.	0.006
	Grab	0.40
Pit B	8-ft. chip channel cut	0.013
Pit No. 1	7-ft. chip channel cut	nil
	Grab	tr.
2	4-ft. chip channel cut	nil
	Grab	nil
3	4-ft. chip channel cut	nil
	Grab	tr.
4	5-ft. chip channel cut	nil
	Grab	tr.
5	11-ft. chip channel cut.	nil
	Grab	nil
6	10-ft. chip channel cut.	nil
7	Grab	tr.
8	Grab	tr.

CONCLUSIONS

Results of the analyses suggest that pitchblende-bearing rock is narrowly limited in extent. All samples that contain measurable uranium were taken from points with surface scintillation readings of more than 200 counts per second. However, the area enclosed by the 200 isorad is small.

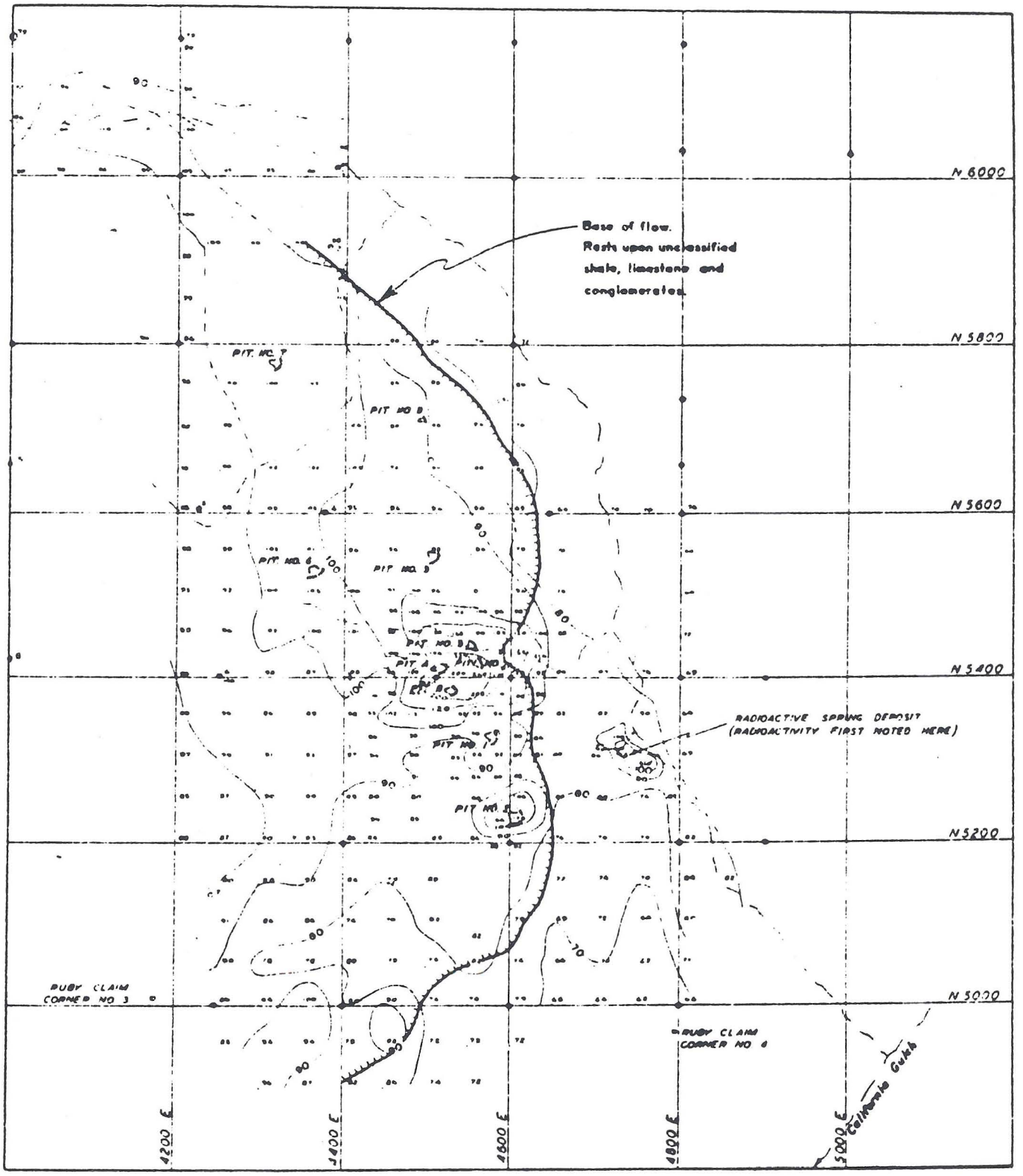


Plate 1

END OF DOCUMENT

710

U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TRACE ELEMENTS PRELIMINARY RECONNAISSANCE REPORT

USGS - PRR _____

Date: 3/6/51

Examined by: Harry C. Granger and John W. Adams

State: Arizona

Date examined: 2/9-20/51

County: Santa Cruz

District: Ruby

1. Name of property: Annie Laurie Sec. 8, T. 23 S., R. 11 E. Ruby Quadrangle

2. Directions to property: 1 mile west of Ruby, Arizona; thence 2 miles southerly on Ore Blanco Mine road.

3. Owner or lessee: John H. Bright
   Address: 3914 South United States Avenue, Tucson, Arizona

4. Published references: None

5. Mine workings: Several prospect pits

6. Type of examination: Geologic and Topographic mapping

7. Radioactive deposit: Type and Age: Fissure and replacement veins, probably Tertiary
   Wall rocks: Altered granite and porphyry

   Ore minerals, primary: Pitchblende, sphalerite, galena, chalcopyrite

   Ore minerals, secondary: Probably torbernite and uranophane

   Gangue minerals: Calcite

   Ore-gangue relationship: Sulfides and calcite of nearly the same age; pitchblende may be later.

   Attitude: Related to shear breccias that trend generally N-S and dip 20° to 60° E.
   Shape: Sheet-like
   Length (strike or other): 100 feet (?) Width: 3 feet Thickness: 200 feet (?)

8. Counter type: Nuclear Background: 3-5 divisions on 0.2 scale

9. Sample information:

Sample No.	Type	eU (percent)	Chem. U assay (percent)	Location
HG-9-51	2' channel	0.019	0.015	Calcareous tufa from spring deposit
HG-10-51	1.3' channel	0.016	0.010	Pyrite-bearing sediments from prospect at spring deposit
HG-11-51	3' channel	0.015	0.015	Altered granite from cut about 75 feet East of main pit
HG-12-51	5' channel	0.015	0.010	Altered granite from main pit
HG-13-51	3' channel	0.022	0.010	Altered granite from cut about 40' south of main pit

10. Unpublished references: RMO-889, Robt. Wright, Jan. 1951

[redacted]

14. Proof of ownership received: No 15. Supplemental report to follow? Yes

Distribution:

Norritt	(8)	Thurlow	(1)	McKelvey	(1)
Mineral Deposits Wash.	(9)	Oster	(1)	Fischer	(1)
TEPCO Wash.	(3)	Geochem. & Pet. Wash.	(1)	Weissenborn	(1)
Johnson	(2)	Fuels	(1)	Cathcart	(1)
Hosted	(1)	Alaskan	(1)	Page	(3)
Towle	(1)	Geophysics	(1)		

30147

Cop. 1

LARSEN · INDUSTRIES

URANIUM · OIL AND GAS
MINERAL REFINING
URANIUM REFINING

BOX: 2254 SALT LAKE CITY, UTAH
OFFICE: HOTEL NEWHOUSE
PHONE - EL 5-3596

August 7, 1957

Arizona Mining Engineer
State Office Building
Phoenix, Arizona

Dear Sir:

Exploration drilling is being started on the Annie Laurie prospect in the southwest quarter of Section 8, Township 23 South, Range 11 East, in the Oro Blanco District of southern Arizona.

Access to this area is by gravel road from U. S. Highway 89 at Kinsley or Nogales.

This work is being done by Lewis H. Larsen and Jerry Phillips, with Mr. Phillips as operator.

They will appreciate you dropping by at your convenience. I believe both Mr. Larsen and Mr. Phillips will be at the Kinsley Ranch or in the vicinity the balance of this week.

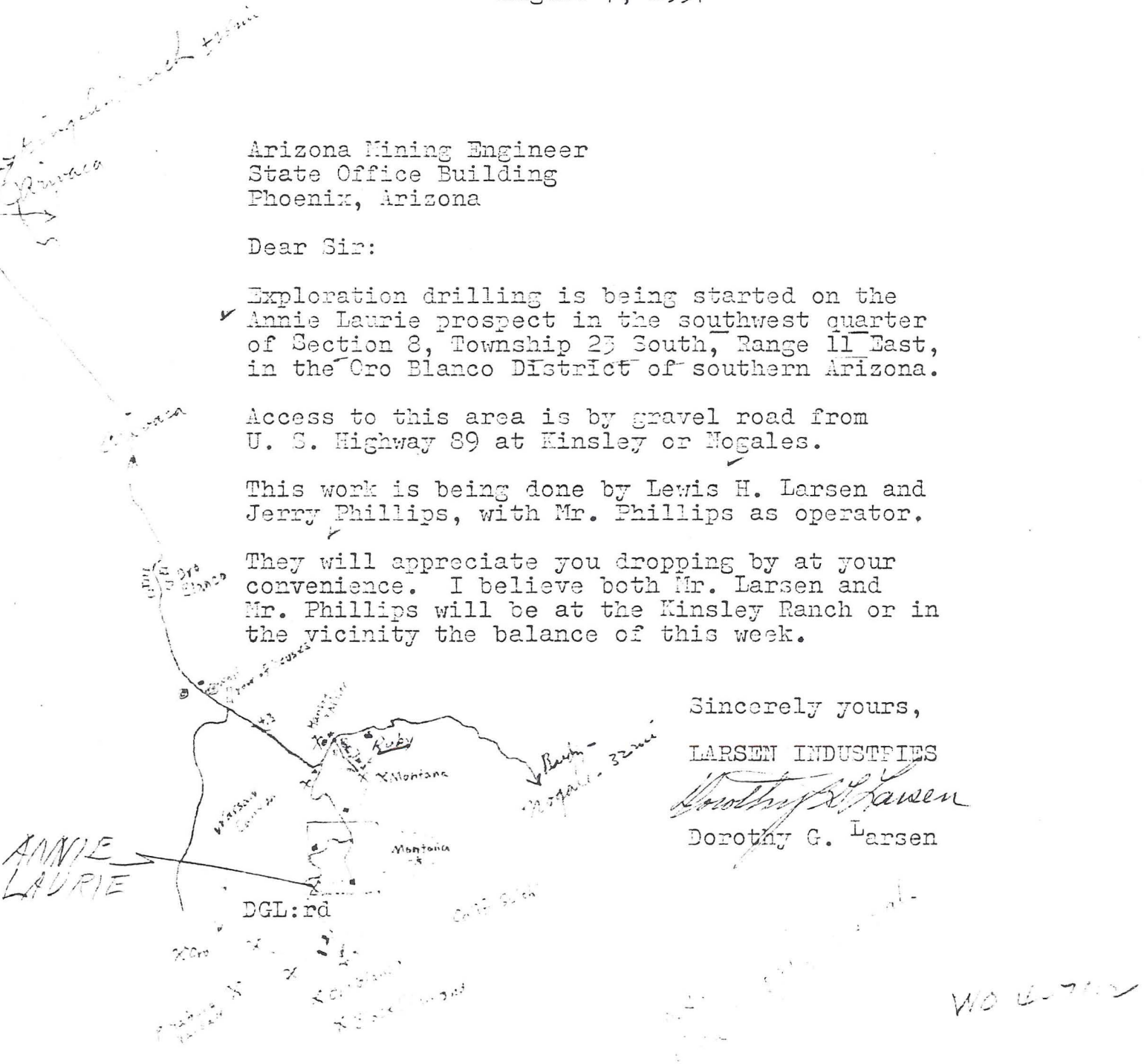
Sincerely yours,

LARSEN INDUSTRIES

Dorothy G. Larsen

Dorothy G. Larsen

DGL:rd



STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA

COPY

November 6, 1957

Mr. Lewis H. Larsen
P. O. Box 2254
Salt Lake City, Utah

Dear Mr. Larsen:

The brown crystals associated with the kasolite in the Duranium property have been examined by the United States Geological Survey. The x-ray pattern corresponds to that of cerussite, although the spacings are slightly larger. A spectrographic analysis of both the kasolite and the cerussite are as follows:

	Cerussite	Kasolite
Over 10%	Pb	Si U
1-10%	Si	Pb
.1-1%	Fe Mg Al	Fe Mg Al Cu

Our Mr. Flagg is not satisfied that the crystals are cerussite and wants to do a little more work on them when he recovers from the effect of a bad fall.

I hope that the Annie Laurie is working out to your satisfaction. We recently learned that there is reference to the Annie Laurie in A.E.C. Research Report RMO-590. You no doubt have copy of A.E.C. Report RMO-677, 1951, "Annie Laurie Prospect, Santa Cruz County, Arizona" by R.J.Wright. If not, it is obtainable from the Office of Technical Services, U. S. Departmentof Commerce, Washington, 25, D.C. RMO-590 may be had from the same source. The prices are not listed and have to be obtained from Washington.

Yours very truly,

FRANK P. KNIGHT,
Director.

FK:lp

cc: Mr. Phillips

Mr. Phillips:

The dark minerals in the quartz sample you gave me are hematite and amphibole. I suggest that you send it to the Arizona Bureau of Mines, University Station, Tucson, Arizona for a gold assay. This Department does no assay or spectrographic work.