CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

05/04/87

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: BAUER KELLY

ALTERNATE NAMES:
HOPE

LA PAZ COUNTY MILS NUMBER: 231

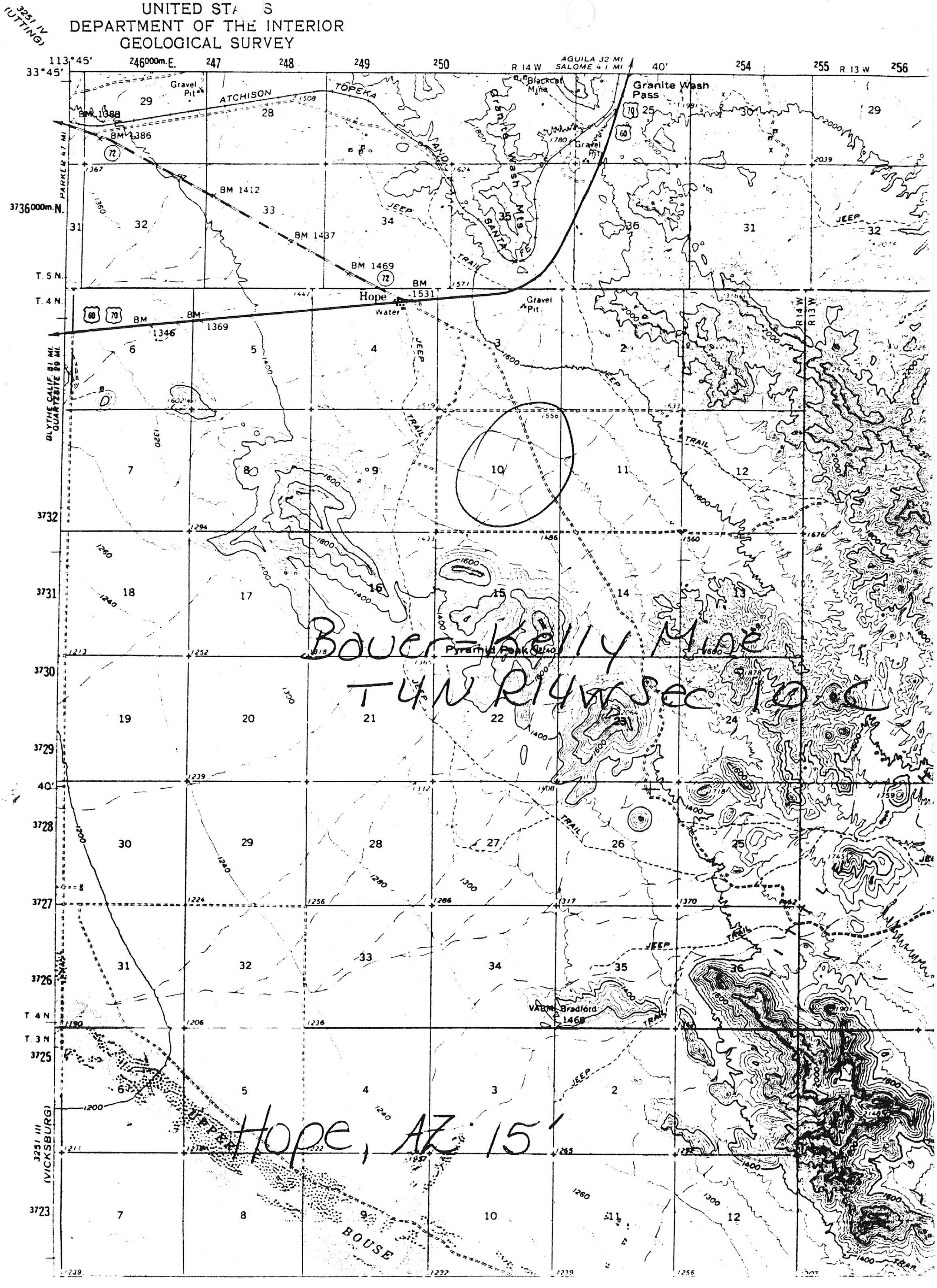
LOCATION: TOWNSHIP 4 N RANGE 14 W SECTION 10 QUARTER C
LATITUDE: N 33DEG 42MIN 03SEC LONGITUDE: W 113DEG 40MIN 33SEC
TOPO MAP NAME: HOPE - 15 MIN

CURRENT STATUS: EXP PROSPECT

COMMODITY:
IRON
TITANIUM
THORIUM
URANIUM

BIBLIOGRAPHY:
HARRER, C.M., 1964, USBM IC 8236
AZBM FILE DATA
ADMMR BAUER-KELLY FILE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

INFORMATION FROM MINE CARDS IN MUSEUM

ARIZONA

LaPaz Co

Lucky Find Mine

7 Mi W. of Quartzsite

MM.1504 Thorianite

MILS # 231

1-AKA

BAUER-KELLY (file)

BAUER-KELLY MINE YUMA COUNTY

Abstract from "Arizona Iron Ore Deposits" in IRON COMMODITY file. The Bauer-Kelly Magnetite Placer lies along the west foot of the Little Harquahala Mtns, south of Salome (Secs. 2-3,9-12,13-17,21-22, T4N, R14W). The deposit has been superficially tested on a rough grid system of pits and bulldozer cuts, four to a section. Most of these openings range from 6 to 10 feet in depth. Samples from these openings were reported to indicate 3 to 3½ percent of magnetite, with some "hot" spots ranging up to 10 percent. Titanium oxide (mostly illmenite or sphene) is appreciable and tests by Ralph Langley thusfar made, do not indicate that the titanium oxide can be economically separated in sufficient amounts to make the 0.25 percent maximum allowed for blast furnace use. Concentration tests, both by screen and by magnetic separators, yielded a concentrate which assayed about 62-65 percent iron and 0.9 percent TiO_2. It was tentatively concluded, by Langley and his associates that some of the magnetite and titanium were intimately mixed, possibly as a solid solution. (Paul Bauer, Box 1226, Wickenburg (last address). (Bauer was last reported to be working for the Geological Survey in Utah).

Bauer

November 22- 1963.

Mrs Mabelle A. Bauer,
5709 West Osburn Road,
Phoenix 85031
Arizona.

Dear Mrs Bauer;

I received your records which came by insured mail-- and am returning them--also by registered mail, after having made notes from them.

These records were made before any of us learned very much about useful specifications of magnetite iron concentrates, and so are not too informative. What we must know about a black sand deposit is (I) the area of the potent ground (2) how deep the iron values extend, how much--%-- Magnetite iron and how much ilmenite the gravels carry.

Depth is important because of cost of operations and the iron content must average minimums of 4-5% of plus 65% Fe, in order to be economically feasible.

The report by Kennard and Drake--March 2,1959 reports that the average recovery from the field samples--1040 pounds-- was less that 2.0% from minus 8 mesh material or approximately 1.0% of the mine run material. That would be entirely too low for economical production. The same report gives a Ti02 content of from .61 to 1.20%--which is much too high for direct melting into steel--but rather low for use in the Japanese process I have mentioned.

In the report of Los Angeles Testing Laboratory-- Dec 26,1957 one sample assayed 6.5% magnetite iron--one 3.2%, two were 2.0% and one 0.05%. In the report of Lewis A. Smith dated January 9,195 he writes " The sampling, so far done, is reported to average a grade of 6-7% of magnetite, 1.15 % of radio-active material". Those are the only references to better than 5% magnetite in your file. And of course we do not know how those samples were taken.

The samples I took from your ground carried from 4% magnetite upward to as much as 10% but those samples were taken from a rich wash. They also carried rather high Ti02--which , for feed to this Japanese process would be good. These assays are only indicative. If and when the Japanese process is taken over by the prople I am working with, then we will consider which black sands deposit to investigate--and the investigation will consist of an orderly drilling program over a considerable area and to a de th of 100 fe or more--and testing the material taken out of each hole. Until then the situation will remain dormant.

Lewis -
We have stirred up quite a lot of interest in that Japanese process in Phoenix. Good start. Regards - RRL

November6-I963.

Mrs Mabelle A. Bauer,
5709 W. Osborne Rd.,
Phoenix 8503I,
Arizona.

Dear Mrs Bauer;

I have been out of the city most of the time since receiving your letter hence the delay in reply.

For your information--there has actually been no realistic progress with respect to utalizing black sand concentrates since my last contact with you. No one has ever produced one pound of marketable concentrates suitable for use in making steel, other than the product which I developed which has been accepted by major steel making entities in Japan for blending with their low iron content iron ore fines which carry no TiO2.

As you no doubt know, several millions of dollars have been expended by the " big name" entities in the Redrock area--yet none of them have ever produced even one pound of marketable product.

A new development has occured which makes my accpmplishment of producing a blending product much less important--that is--a Japanese steel making metallurjist has developed a process and furnace design by the use of whoch all of the TiO2 is removed, the iron melted down into steel ingots and the TiO2 recovered into pigment grade titanium oxide. This is the only realistic solution to the black sand-beach sand situation thus far accomplished. I am now negotiating an arrangement between the inventor of that process and some capitalists to take over and establish that process in this country. If I succeed -as I think I will, we will need a black sand property at which the initial installation can be made. That is the reason for my renewed interest in a suitably located property. The amount of TiO2 content is no longer a problem. This I thought you should know.

So that I can definitely locate the ground on a map--will you please write me the legal description of the claims--Section, Range,Township etc. Do you have any information as to the iron content of the gravel--any assays--to what depth the iron particles extend. I assume the title is in your name--that you own the claims outright.

Best wishes,

cc Lewis A. Smith.

Ralph R. Langley

November 15-1963.

Mrs Maybelle Bauer,
5709 West Osburn Rd.,
Phoenix,
Arizona. 85031

Dear Mrs Bauer;

Received your letter and the legal descriptions of your ground.

I do not have a map of that immediate area but perhaps Mr. Smith can get me one.

I do not want you to be overly optomistic about this matter. Unless and until a process which removes all the TiO2 from ~~iron~~ concentrates is developed and made available there is no sound interest in black sands.

There is one such process--in Japan. I am working on a negotiation between the owners of that process and some people in Chicago. Such negotiations proce.d slowly. This one is progressing. I believe there is a good probability that a deal will be made. My interest in your ground lies in that it is well located and that I think it would be well for me to have a map of the ground and the area generally,with respect to railroad etc etc.

I would not be interested in doing any work on any black sand ground anywhere, or in taking any written option on any--unless and until a definite market interest is developed.

Will keep you informed as to developments. Meantime if you can locate any assays of your concentrates would like to have them.

Best wishes,

cc Lewis A. Smith.

Ralph R. Langley

MEMBER
AMERICAN INSTITUTE OF
MINING, METALLURGICAL
AND PETROLEUM ENGINEERS

RALPH R. LANGLEY
CONSULTING ENGINEER
1156 SOUTH HIGHLAND AVENUE
LOS ANGELES 19, CALIFORNIA

PRESIDENT
ARIZONA METALS COMPANY

TELEPHONE
WEbster 1-2351

November 22-1963.

Mr. Lewis A. Smith,
Field Engineer,
Department of Mmineral Resources,
Fair grounds,
Phoenix,
Arizona.

Dear Lewis;

Am writing Mrs Bauer as per copy attached.

If you have any magnetite and ilmenite records other than those refered to, would like to have them.

The Negotiations between my Chicago contact and the Nakajima group in Tokyo are seriosly progressing--but slowly--as usual.

Will keep you advised.

Best wishes,

Ralph R. Langley

Ralph R. Langley

CC Mrs Bauer.

Axel.

RALPH R. LANGLEY
CONSULTING ENGINEER
1156 SOUTH HIGHLAND AVENUE
LOS ANGELES 19, CALIFORNIA

MEMBER
AMERICAN INSTITUTE OF
MINING, METALLURGICAL
AND PETROLEUM ENGINEERS

PRESIDENT
ARIZONA METALS COMPANY

TELEPHONE
WEBSTER 1-2351

October 16-1963.

Mr. Lewis A. Smith,
Field Engineer,
Department of Mineral Resources,
Mineral Building,
Fairgrounds,
Phoenix,
Arizona.

Dear Lewis;

Am writing Mrs Bauer as per copy.

I would appreciate having any information you or your Tucson engineer can pick up regarding Mr. J. E. Dietrich, 2133 No Walnut Blvd, Tucson and as to what he is accomplishing on the Brown ground..

My personal experience--and that of National Lead Company and Du Pont--is that it is not realistically possible to remove enough of the Tio2 by any amount of fine grinding to get a product acceptable for direct melting into steel.

Only a small amount of TiO2 in the concentrate soon builds up into a " salamander" in the furnace and must be chiseled out.

I am finally convinced that the only way to remove the TiO2 is by melting the iron away from the TiO2--as is done in the Japanese process--furnace design.

Will appreciate having any information you can send me on the subject at any time.

Best wishes,

Ralph R. Langley.

October 16-1963.

Mrs Bauer,
5709 W. Osborn Rd,
Phoenix,
Arizona.

Dear Mrs Bower; Sorry I do not have your initials.

I am advised by Mr. Lewis A. Smith that you still have the " black sand" ground near Hope.

A situation has arisen which may possibly result in me being interested in a property carrying as much TiO2 as does your ground.

How many claims do you have in that block and have you done any development work--drilling etc--since I had a lease on the ground. Have you learned any more about the depth of the iron bearing gravel--or how much of the ground is iron bearing.

How far are your claims from the railroad--not very far as I remember.

Will appreciate having whatever information you care to send me.

Sincerely,

Ralph R. Langley

c c Lewis A. Smith.

Mr Smith.

The assay refered to January II-I960
is Fe 66.II%
S .008
Phos .I9 and TiO2 I.0I

R. R. L.

Mr and Mrs Paul Bauer,
Box I226,
Wickenburg,
Arizona.

Dear Mr & Mrs P;

Received your note and the copy of preliminary understanding this morning.

The assay quoted in your letter is quite interesting. The Phosphorous and Titanium are considerable lower than in the crude material in the Redrock area but still too high for acceptance for making steel. Assuming that these elements are not chemically associated with the iron--which is the case with most " black sand" ground, it will be a relatively simple matter to remove the TiO2 down to about 0.I2 % which is acceptable--and at the same time reduce the Phos to an acceptable content of about 0.005. The sulpure content is quite OK.

If you will send me about five pounds out of the I00 pound lot you have on hand I would like to analyze it and process it over magnetic seperator drums, after screening it, and ~~thenhaupay~~ the different products for Fe--silica--TiO2 and Phos.

A ~~nne~~ pouhd coffee can full will be about right--which you can send parcel post or railway express--either in a can or in a tight bag.

This should be a representative sample out of the I00 pouhds. Mix the I00 pounds or a substantial portion thereof and take the sample you send from different parts of the mixed pile.

I hope to have the reactions of the local steel company and also of the steel mill in Japan as to the sample briquetts they both now have, reasonably soon. Will keep you advised.

Sincerely,

Ralph R. Langley

cc L. A. Smith

Iron Commodity file

K-165

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

April 12, 1960

Mr. Lincoln A. Stewart, Mining Engineer
United States Bureau Mines,
Box 4097
Tucson, Arizona

Dear Lincoln: IRON

There are four reported magnetite placers which have been investigated in the past two years, but so far no production has resulted.

The first is about half way between Florence and Oracle Junction. This is known as the Omega deposit, and is owned by Southwest Iron & Steel Industries, Inc., 1016 Valley National Bank Building, Tucson. This deposit was fairly extensively explored and considerable test work was done in a metallurgical way.

The second is the Bauer-Kelly deposit which lies 2 miles south of Hope, and is owned by Paul Bauer (now with the U.S.G.S. in Salt Lake City). It is under tentative option to Ralph R. Langley, 1156 South Highland Avenue, Los Angeles, Calif., who is conducting tests on the magnetite concentrates, with the view of separating titanium which is the only deleterious constituent now known to be associated. He is also studying the cost of making extrusion pellets. Preliminary results have been promising.

Both of these placers run between 3.5% and 5% magnetite.

Silas P. Silverman, 129 W. Maryland Ave., Phoenix, is preparing to mine a large tonnage of gold placer material in the Hassayampa Creek area. This will yield a fairly large tonnage of by-product magnetite. If he handles 1000 tons of placer per day, as now contemplated, he will recover about 75 tons of magnetite concentrates as a by-product. Should Langley develop the Bauer placer, the two men may combine their magnetite to make it easier for both to meet boatload tonnages of 10,000 to 12,000 tons. Of course all of this is still in the formulative stage.

S.L. Kelly, 2426 N. (Cactus) St., Tucson, has a magnetite placer in the south part of the Big Horn Mountains, which is similar to the Bauer occurrence. He is also reported to control a large area near Redrock and south of Omega. This material is said to resemble the Omega material. Langley is interested in obtaining the Big Horn deposit should the Bauer deal prove out.

Bauer - Kelly Mine
Sec. 2, 3, 9-16 T.4N., R.14W.
Yuma County

reference: Arizona Dept. of Mineral Resources
Bauer - Kelly Mine (file)

present owner:

minerals: magnetite

history of the area:
By 1958 ~~the~~ property was owned by mr. and Mrs. Paul Bauer and D.W. Kelly and others, of Quartzite, Az. They did some location work. Several firms tested the property. High TiO_2 values caused seperating problems. In 1963 a Japanese firm was interested in the property.

geology:
The material is fine sand with severely weathered diorite porphyry and olivine-hornblendite rock fragments. There is some quartz and schist in the area.

MEMORANDUM

Bauer-Kelly Placer — Sept. - 1960

Harquahala District, Yuma County

Mr. Ralph R. Langley, who has a working agreement with Paul Bauer and Kelly, stated that tests revealed that the TiO_2 was intimately mixed with the magnetite and probably as something like a solid solution. He felt that the Brown placer further South was more workable because the titanium could readily be separated out and the magnetite content of the ore appeared to be somewhat higher. He said, however, that the Bauer placer had about 15-16 miles less truck haul to the railroad, the rail freight being nearly the same. The Bauer placer runs 3½ to 4% magnetite, while the Brown placer runs closer to 4½% magnetite. The Bauer placer runs 0.9% of TiO_2 as compared to 0.8% in the Brown placer. The Brown placer material, because the titanium can be separated, also yields a 27% TiO concentrate as a by-product. He will hold on to the Bauer-Kelly agreement for the time being.

LEWIS A. SMITH

BAUER-KELLY MINE (file)

YUMA COUNTY
HARQUAHALA DIST.

COPY

Ralph Langley has been conducting pelletising tests on the magnetically separated magnetite concenrtrates from the Bauer-Kelly placer. The pellets produced by extrusion machines are 3 inches long and 1-1¼ inches in diameter. These were forwarded to a large steel company in Japan and proved entirely satisfactory for blast furnace feed. However, some samples were somewhat high in titanium which in this case consists of ilmenite and sphene (titanite). Ilmenite is $FeTiO_2$(FeO TiO_2) and sphene is $CaTiSiO_5$(CaO.TiO_2.SiO_2). The Japs prefer about 0.30% maximum, so that some beneficiation, to lower parts of the Bauer ore to within limits, would be necessary. Langley states that this problem has been licked. Magnetic concentration, which would undoubtedly be used, appears to reduce the titanium content to under 0.10%. Freight from Vicksburg (4 miles from the center of this placer) is $3.75 per ton to San Pedro, California. The remainder of the cost would be mining, concentration andpelletising. The Japs have offered $11.00 per ton for 60% iron content. Above 60% iron, a bonus will be granted on a sliding scale, f.o.b. San Pedro. One extruding machine will process 500 to 600 tons of concentrates per day, which would mean that the mine would have to handle around 12,500 to 14,000 tons of placer material per day on a 26 day basis. Since most Japanese boats carry 10,000 to 12,000 tons, this stipulated production rate would produce a boat per month. It is possible that the concentrates would be stocked at an extrusion plant near San Pedro. Mr. Langley now believes that satisfactory costs can be obtained and that the use of placer iron ore is beginning to be of greater importance that heretofore. LEWIS A. SMITH- WR - 2-26-60

BAUER-KELLY MINE

YUMA COUNTY
HARQUAHALA DIST.

Mr. and Mrs. Paul Bauer of Quartzsite reported that a California firm was testing their magnetite deposit at the west base of the Little Harquahala Mountains. So far the tests indicate that screening between 20 & 30 mesh, produced a magnetite concentrate which runs 62% of iron. 1% of titanite came down with the iron. The parties concerned plan to test the deposit for depth and consistency in the immediate future. The Baurs have agreed to an option on a percentage basis.

L.A. Smith - Weekly Report - 12-29-58

Mr. Charles Jonas reported that tests run on the Bauer Magnetite placer indicated that the material would generally not average better than 3½% of magnetite per ton. However, there are some better areas which would exceed 3½%. Screen and magnetic separator tests indicate a very high recovery and produced a concentrate which ran around 68% iron. No penalty associate materials were in the concentrate. Further tests are now being made for bulk run. He stated that it would have to run between 3 and 4% magnetite to pay.

L.A. Smith - Weekly Report - 3-16-59

It is reported that J.J. Carling of Salt Lake City, representing Eastern capital, were drill testing the Bauers Iron Deposit (placer) in the Harquahala Mtns. Area. Thus far they report just under 6% magnetite concentration. Tests are reported to have yielded a fine recovery and 62.68% iron. 3 different testing procedures thus far have checked closely. The placer so far ranges from 10 to 40 ft. in depth. They are running a small test mill and have a magnetic separator to check the drill samples. No serious deleterious constituents have been found thus far. The 40 ft. hole cut a second placer below the caliche layer, which also contains good magnetite. Mr. Ellett's group have an option on the deposit, but are dubious about iron ore markets.

L.A. Smith - Weekly Report - 6-7-59

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine BAUER-KELLY MINE Date January 9, 1958

District Harquahala District, Yuma County Engineer Lewis A. Smith

Subject: Placers visited.

Location: The Bauers and Kelly Placer - west side of Little Harquahala Mountains, and 2½ miles south of Highway 60-70, and on the valley (Parts of Sections 2, 3, 9, 13, 14, 15 and 16, and all of 10, 11 and 12, T4N, R14W). Further land now being taken, includes the remainder of section 16, all of 17, and parts of 20 and 21. The Placer ranges from 5 to 12 feet in thickness.

The location work has been done, by bulldozer pits, on the original block and is proceeding on the new block. 2 - 10 foot deep cuts were made on each quarter section. (Total area is 5,120 acres).

Owners: Mr. and Mrs. Paul Bauer and
D. W. Kelly and others. All of Quartzsite, Arizona.

Geology: Shown on the accompanying sketch.

Plate I

The sampling, so far done, ~~indicates~~ reported to a average grade of 6-7% of magnetite, 1.15% of radio-active material. The accessory minerals indicate that zircon and monazite predominate. Much of the material is fine sand with severely weathered diorite porphyry and olivine-hornblendite rock fragments. On the south border of the area quartz and schist are present in minor amounts. However, the magnetite, monazite, zircon and a green mineral (suspected of containing a little nickel) are apparently derived from the basic igneous complex.

Much further testing, on a co-ordinate plan, was recommended, especially in the red lined area.

The general geological lay-out of the immediate area is shown on the accompanying sketch map and generalized section.

The deposits lie on a partially peneplaned schist area, the schist having been intruded, by granitic rocks, diorite porphyry and diabase, prior to peneplanation. The caliche layer represents the time intervening before the faulting which formed the Graben. The placer gravels represent the erosion after faulting, which was not far back. The bottleneck through the west tilted block caused the gravels to accumulate behind the block. Schist mounds rise up through the caliche and are surrounded by later gravels. Apparently the later gravels were deeper at one time and recently have been back-cut by numerous gullsys as the bottlenecks were lowered.

The hornblendite occurs as floaters in the dome of the diorite porphyry mass, the latter having been exposed by the east fault escarpment. Since the caliche contains considerable schist and diabase and hardly any granitic

rocks, it is considered to be pre-east fault. And since the later gravels are derived mostly from the granitic rock back of the fault face it is considered as having been formed during, or after, (or both) the beginning of the faulting, but largely post-fault. The diabase dikes are pre-caliche in age. The short age of the later gravels is indicated by their pebble angularity and by the indicated volume of material removed from east of the fault between the projected fault crest and the present eroded fault-face, as shown by the orange lined area on the generalized section. The bulk of this gravel still remains within the graben basin behind the west fault-block. The two exits show evidence of new topographic expression.

D. ARTMENT OF MINERAL RESOU CES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Bauer-Kelly mine

Date 1-9-58

District Harquahala

Engineer Lewis A Smith.

Subject: Placers.
TAN R14W