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PRINTED: 08/13/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: SEVENTYSIX GROUP

ALTERNATE NAMES:
FOURTH OF JULY

YAVAPAI COUNTY MILS NUMBER: 917A

LOCATION: TOWNSHIP 8 N RANGE 1 E SECTION 9 QUARTER NE
LATITUDE: N 34DEG 03MIN 11SEC LONGITUDE: W 112DEG 15MIN 18SEC
TOPO MAP NAME: COLUMBIA - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
SILVER
ANTIMONY
GOLD
LEAD

BIBLIOGRAPHY:
USGS COLUMBIA QUAD
ADMMR TIP TOP MINES FILE
LINDGREN, W. ORE DETPS JEROME & BRADSHAW MTN
QUADS USGS BULL 782 1926 P 182
ADMMR SEVENTYSIX MINE FILE
ADMMR HARRIS CONSOLIDATED COPPER CO. FILE

*GENERAL REFERENCES

REFERENCE 1 F1 < USGS BULL 782, p. 1 >

REFERENCE 2 F2 < AZ DEPT MIN. RESOURCES FILE DATA >

REFERENCE 3 F3 < USBM I.C. 8078, p. 28-30 >

REFERENCE 4 F4 < ABM BULL 148, p. 23-24 >

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

*RECORD NUMBER B10 < >
*RECORD TYPE B20 < X, 1, M >
DEPOSIT NUMBER B40 < >
*REPORT DATE G1 < 8, 1, Ø, 0, 9 > (YR. MO.)
*INFORMATION SOURCE B30 < 1, 2 >
+FILE LINK IDENT. B50 < USBM 004 025 1739 >
*REPORTER (SUPERVISOR) G2 < DEWITT, ED. H. > (last, first, middle initial) ( ) (last, first, middle initial)
*REPORTER AFFILIATION G5 < ABGMT >
*SITE NAME A10 < SEVENTY-SIX MINE >
SYNONYMS A11 < 76, SEVENTY-SIX CLAIM >

LOCATION

*MINING DISTRICT/AREA A30 < TIP TOP DISTRICT >
*COUNTY A60 < YAVAPAI >
*STATE A50 < AZ >
*COUNTRY A40 < U.S. >
*PHYSIOGRAPHIC PROV A63 < 1, 2, Ø >
*DRAINAGE AREA A62 < 1, 5, 0, 7, 0, 1, 0, 2, Ø >
+LAND STATUS A64 < 0, 0, Ø, , Ø, ( ) >
*QUADRANGLE NAME A90 < COLUMBIA , (1, 9, 6, 9,) >
*QUADRANGLE SCALE A100 < 2, 4, 0, 0, 0 >
SECOND QUAD NAME A92 < , ( ) >
SECOND QUAD SCALE A91 < >
*ELEVATION A107 < , 2, 7, 0, 0, Ø, F, T >

UTM

*NORTHING A120 < 3, 7, 6, 8, 5, 8, 0 >
*EASTING A130 < 3, 8, 4, 1, 5, 0 >
*ZONE NUMBER A110 < +, 1, 2 >

*ACCURACY

ACCURATE (ACC) (circle)
ESTIMATED EST < >

GEODETIC

+LATITUDE A70 < - - N >
+LONGITUDE A80 < - - W >

CADASTRAL

*TOWNSHIP(S) A77 < 0, 0, 8, N, Ø, , Ø, , Ø, , >
*RANGE(S) A78 < 0, 0, 1, E, Ø, , Ø, , Ø, , >
*SECTION(S) A79 < 09 , Ø, , Ø, , >
*SECTION FRACTION(S) A76 < SE OF NE >
*MERIDIAN(S) A81 < GILA AND SALT RIVER >

*POSITION FROM NEAREST PROMINENT LOCALITY A82 < 7.4 MILES WEST-SOUTHWEST OF BLACK CANYON CITY >
+LOCATION COMMENTS A83 < 0.75 MILES WEST OF TIP TOP MINE >

* ESSENTIAL INFORMATION
+ ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

*COMMODITIES PRESENT C10 <A.G. , A.U. , C.U. , Z.N. , W. ,
*ORE MINERALS C30 < SILVER, RUBY SILVER, STIBNITE, GOLD, GALENA, CHALCOPYRITE, SPHALERITE, CERARGYRITE, PROUSITE
COMMODITY SUBTYPES C41 <
*GEN. ANALYTICAL DATA C43 <
COM. INFO. COMMENTS C50 <

* SIGNIFICANCE

	PRODUCER	NON-PRODUCER
MAJOR PRODUCTS	MAJOR <A.G. , P.B. ,	MAIN COMMODITIES PRESENT C11 <
MINOR PRODUCTS	MINOR <C.U. , A.U. ,	MINOR COMMODITIES PRESENT C12 <
POTENTIAL PRODUCTS	POTEN <Z.N. ,	
OCCURRENCES	OCCUR <W. ,	OCCURRENCES OCCUR <

*PRODUCTION

PRODUCER	NON-PRODUCER
PRODUCTION (YES) (circle) PRODUCTION SIZE (SML) MED LGE (circle one)	PRODUCTION UND NO (circle one)

*STATUS

EXPLORATION OR DEVELOPMENT

PRODUCER	NON-PRODUCER
STATUS AND ACTIVITY A20 <4>	STATUS AND ACTIVITY A20 < >

*DISCOVERER L20 <
*YEAR OF DISCOVERY L10 <~1880 > *NATURE OF DISCOVERY L30 <B> *YEAR OF FIRST PRODUCTION L40 <1936 > *YEAR OF LAST PRODUCTION L45 <1940
*PRESENT/LAST OWNER A12 <
*PRESENT/LAST OPERATOR A13 < LA BAJADA ENG. AND EQUIP. CO
EXPL./DEV.COMMENTS L110 <

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) C40 < VEIN
DEPOSIT FORM/SHAPE M10 < TABULAR
*DEPTH TO TOP M20 < > *UNITS M21 < > *MAXIMUM LENGTH M40 <1000 > *UNITS M41 < FT
*DEPTH TO BOTTOM M30 <180 > *UNITS M31 < FT > *MAXIMUM WIDTH M50 <180 > *UNITS M51 < FT
*DEPOSIT SIZE M15 <SMALL> M15 <MEDIUM> M15 <LARGE> (circle one) *MAXIMUM THICKNESS M60 <6 > *UNITS M61 < FT
*STRIKE M70 < N55E TO N65E > *DIP M80 <70 NE
*DIRECTION OF PLUNGE M100 < > *PLUNGE M90 <
DEP. DESC. COMMENTS M110 <

DESCRIPTION OF WORKINGS

*Workings are: SURFACE M120 UNDERGROUND (M130) BOTH M140 (circle one)
*DEPTH BELOW SURFACE M160 <180 > *UNITS M161 < FT > *OVERALL LENGTH M190 <650 > *UNITS M191 < FT
*LENGTH OF WORKINGS M170 <2200 > *UNITS M171 < FT > *OVERALL WIDTH M200 <30 > *UNITS M201 < FT
*OVERALL AREA M210 <19,500 > *UNITS M211 <SQ FT
DESC. OF WORK. COM. M220 <

GEOLOGY

*AGE OF HOST ROCK(S) K1 <P.R.O.T., T.E.R.T. , U/PB ZIRCON = 1720 MILLION YEARS ; POST- 70 MILLION YEARS
*HOST ROCK TYPE(S) K1A < QUARTZ MONZONITE ; RHYOLITE
*AGE OF IGNEOUS ROCK(S) K2 <P.R.O.T., T.E.R.T. , AS LINE K1
*IGNEOUS ROCK TYPE(S) K2A < AS LINE K1A
*AGE OF MINERALIZATION K3 <C.R.E.T.-T.E.R.T. ,
*PERT. MINERALS (NOT ORE) K4 < QUARTZ, PYRITE, ARSENOPYRITE
*ORE CONTROL/LOCUS K5 < FAULTING, SHEARING
*MAJ. REG. TRENDS/STRUCT. N5 < FOLIATION IN PRECAMBRIAN SCHIST AND GRANITE TRENDS N40E TO N50E
*TECTONIC SETTING N15 <
*SIGNIFICANT LOCAL STRUCT. N70 < VEINS PARALLEL RHYOLITE DIKES AND REGIONAL FOLIATION
*SIGNIFICANT ALTERATION N75 <
*PROCESS OF CONC./ENRICH. N80 < OXIDATION TO 200 FT DEPTH
*FORMATION AGE N30 <
*FORMATION NAME N30A <
SECOND FM AGE N35 <
SECOND FM NAME N35A <
*IGNEOUS UNIT AGE N50 <P.R.O.T. , U/PB ZIRCON = 1720 MILLION YEARS
*IGNEOUS UNIT NAME N50A < CRAZY BASIN QUARTZ MONZONITE
SECOND IG. UNIT AGE N55 <C.R.E.T.-T.E.R.T. ,
SECOND IG. UNIT NAME N55A < UNNAMED RHYOLITE PORPHYRY DIKES.
GEOLOGY COMMENTS N85 < DEPOSIT IS QUARTZ VEIN PARALLEL TO RHYOLITE DIKES, BOTH OF WHICH CUT PRECAMBRIAN QUARTZ MONZONITE

GENERAL COMMENTS

GENERAL COMMENTS GEN < FROM 1936 THROUGH 1940 THE SEVENTY SIX MINE PRODUCED APPROXIMATELY 300 TONS OF HIGH GRADE ORE AVERAGING 0.15% Cu, 2.60% Pb, 313.50 OZ/TON AG, AND 0.10 OZ/TON Au. GOLD VALUES MAY BE TOO HIGH

*GENERAL REFERENCES

REFERENCE 1 F1 < ABGMT- USBM FILE DAT

REFERENCE 2 F2 < AZ DEPT OF MIN. RESOURCES DATA

REFERENCE 3 F3 < USGS BULL 782, p. 180

REFERENCE 4 F4 <

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

*RECORD NUMBER B10 <>

*RECORD TYPE B20 <X,1,M>

DEPOSIT NUMBER B40 <>

*REPORT DATE G1 <8,1,/,1,0> (YR. MO.)

*INFORMATION SOURCE B30 <1,3>

*FILE LINK IDENT. B50 <USBM 004 025 0742>

*REPORTER(SUPERVISOR) G2 < DEWITT, ED, H > ( ) (last, first, middle initial) (last, first, middle initial)

*REPORTER AFFILIATION G5 < ABGMT >

*SITE NAME A10 < TOM WADE MINE >

SYNONYMS A11 < 4TH OF JULY GROUP >

LOCATION

*MINING DISTRICT/AREA A30 < TIP TOP DISTRICT >

*COUNTY A60 < YAVAPAI >

*STATE A50 <A,Z>

*COUNTRY A40 <U,S>

*PHYSIOGRAPHIC PROV A63 <1,2,/>

*DRAINAGE AREA A62 <1,5,0,7,0,1,0,2,/>

*LAND STATUS A64 <0,0,/,/,(,)>

*QUADRANGLE NAME A90 < COLUMBIA (1,9,6,9) >

*QUADRANGLE SCALE A100 <2,4,0,0,0>

SECOND QUAD NAME A92 < (,) >

SECOND QUAD SCALE A91 <>

ELEVATION A107 <2,6,6,0,/,F,T>

UTM

*NORTHING A120 <3,7,6,8,4,2,5>

*EASTING A130 <3,8,3,6,3,0>

*ZONE NUMBER A110 <+,1,2>

*ACCURACY

ACCURATE ACC (circle)

ESTIMATED EST < PROBABLY IN NE QUARTER OF SEC 9, 1000 FT NE OF ELDORADO MINE >

GEODETIC

*LATITUDE A70 <N>

*LONGITUDE A80 <W>

CADASTRAL

*TOWNSHIP(S) A77 <0,0,8,N,:,/,:,/,:,/>

*RANGE(S) A78 <0,0,1,E,:,/,:,/,:,/>

*SECTION(S) A79 < 09 :/ :/ >

*SECTION FRACTION(S) A76 < NE >

MERIDIAN(S) A81 < GILA AND SALT RIVER >

*POSITION FROM NEAREST PROMINENT LOCALITY A82 < 7.7 MILES WEST OF BLACK CANYON CITY, ARIZONA >

*LOCATION COMMENTS A83 < TOM WADE MINE (AND CLAIM) LOCATED BETWEEN ELDORADO AND 76 MINES >

* ESSENTIAL INFORMATION
+ ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

*COMMODITIES PRESENT C10 < AU, AG, PB, W >
*ORE MINERALS C30 < GOLD, SILVER, ARGENTIFEROUS GALENA, UNKNOWNS, WOLFRAMITE >
COMMODITY SUBTYPES C41 <
*GEN. ANALYTICAL DATA C43 <
COM. INFO. COMMENTS C50 <

* SIGNIFICANCE

	PRODUCER	NON-PRODUCER
MAJOR PRODUCTS	MAJOR < AU, AG >	MAIN COMMODITIES PRESENT C11 < >
MINOR PRODUCTS	MINOR < CU, PB >	MINOR COMMODITIES PRESENT C12 < >
POTENTIAL PRODUCTS	POTEN < W >	
OCCURRENCES	OCCUR < >	OCCURRENCES OCCUR < >

*PRODUCTION

PRODUCER	NON-PRODUCER
PRODUCTION (YES) (circle) PRODUCTION SIZE (SML) MED LGE (circle one)	PRODUCTION UND NO (circle one)

EXPLORATION OR DEVELOPMENT

*STATUS

PRODUCER	NON-PRODUCER
STATUS AND ACTIVITY A20 < D >	STATUS AND ACTIVITY A20 < >

*DISCOVERER L20 <
*YEAR OF DISCOVERY L10 < LATE 1890'S > *NATURE OF DISCOVERY L30 < B > *YEAR OF FIRST PRODUCTION L40 < 1927 > *YEAR OF LAST PRODUCTION L45 < 1935
*PRESENT/LAST OWNER A12 <
*PRESENT/LAST OPERATOR A13 <
EXPL./DEV.COMMENTS L110 <

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) C40 < VEIN
DEPOSIT FORM/SHAPE M10 < TABULAR
*DEPTH TO TOP M20 < > *UNITS M21 < > *MAXIMUM LENGTH M40 < > *UNITS M41 < >
*DEPTH TO BOTTOM M30 < > *UNITS M31 < > *MAXIMUM WIDTH M50 < > *UNITS M51 < >
*DEPOSIT SIZE M15 (SMALL) M15 < MEDIUM > M15 < LARGE > (circle one) *MAXIMUM THICKNESS M60 < > *UNITS M61 < >
*STRIKE M70 < N 65 E > *DIP M80 < 70 TO 80 NW >
*DIRECTION OF PLUNGE M100 < > *PLUNGE M90 <
DEP. DESC. COMMENTS M110 <

DESCRIPTION OF WORKINGS

*Workings are: SURFACE M120 UNDERGROUND (M130) BOTH M140 (circle one)
*DEPTH BELOW SURFACE M160 < > *UNITS M161 < >
*LENGTH OF WORKINGS M170 < > *UNITS M171 < >
DESC. OF WORK. COM. M220 <
*OVERALL LENGTH M190 < > *UNITS M191 < >
*OVERALL WIDTH M200 < > *UNITS M201 < >
*OVERALL AREA M210 < > *UNITS M211 < >

GEOLOGY

*AGE OF HOST ROCK(S) K1 < P, R, O, T, U/PB ZIRCON EQUAL TO 1720 MILLION YEARS
*HOST ROCK TYPE(S) K1A < QUARTZ MONZONITE
*AGE OF IGNEOUS ROCK(S) K2 < P, R, O, T; T, E, R, T, U/PB ZIRCON EQUAL TO 1720 MILLION YEARS; PROBABLE PALEOCENE - MIOCENE
*IGNEOUS ROCK TYPE(S) K2A < QUARTZ MONZONITE; RHYOLITE PORPHYRY
*AGE OF MINERALIZATION K3 < CRET.-PALEO.
*PERT. MINERALS (NOT ORE) K4 < QUARTZ, PYRITE
*ORE CONTROL/LOCUS K5 < FAULTING, SHEARING
*MAJ. REG. TRENDS/STRUCT. N5 < BATHOLITH (QUARTZ MONZONITE) RATHER MASSIVE AND STRUCTURELESS
*TECTONIC SETTING N15 <
*SIGNIFICANT LOCAL STRUCT. N70 <
*SIGNIFICANT ALTERATION N75 < NONE
*PROCESS OF CONC./ENRICH. N80 < OXIDATION AT NEAR-SURFACE
*FORMATION AGE N30 <
*FORMATION NAME N30A <
SECOND FM AGE N35 <
SECOND FM NAME N35A <
*IGNEOUS UNIT AGE N50 < P, R, O, T, AS LINE K1
*IGNEOUS UNIT NAME N50A < CRAZY BASIN QUARTZ MONZONITE
SECOND IG. UNIT AGE N55 < CRET-PALEO.
SECOND IG. UNIT NAME N55A < RHYOLITE PORPHYRY DIKES
GEOLOGY COMMENTS N85 < TOM WADE IS VEIN SYSTEM CUTTING PROTEROZOIC QUARTZ MONZONITE. RHYOLITE PORPHYRY DIKES OF CRET-PALEO AGE OCCUR IN DISTRICT BUT ARE NOT NECESSARILY COINCIDENT WITH VEINS. TOM WADE AND EL DORADO ARE SAME VEIN SYSTEM

GENERAL COMMENTS

GENERAL COMMENTS GEN <

"76" Mine Yavapai Co.

KP WR 7/26/79 - Paul Mooseau, is evaluating the 76 Mine. He reported to have worked in the summer during college. A friend is interested in supplying money to evaluate the potential of base precious metal vein deposits and they have a mutual friend who is a retired mining engineer and is supplying technical assistance. 8/10/79 a.p.

May 27, 1957

"76" MINE Yavapai County

This property inactive.

MARK GEMMILL

B. J. CLAUSEN, JR.

Mining Engineer

302 First National
Bank Building,
Phoenix, Arizona

June 26, 1939.

La Bajada Exploration,
Engineering & Equipment Corporation;
Messrs. Claude C. Findly and F. C. McDonald,
Phoenix, Arizona.

Gentlemen:

Following are my observations and recommendations regarding the operation of your mining properties located in the Tip Top District which I visited last week. As requested, my examination was restricted to the study of operating conditions for the purpose of recommending an economical and feasible program for profitable production.

GENERAL

My understanding of the financial situation of the LaBajada Corporation is that you now have some seven thousand dollars, after providing for payment of pressing outstanding obligations, with which to place your properties in profitable production. That sum is none too ample and, unless operations are conducted upon a very economical and efficient basis and unless you are fortunate in producing good ore as soon as operations are underway, I doubt whether that amount will be sufficient, I would suggest, if possible to do so, that arrangements now be made to have an additional few thousand dollars available for working capital if needed.

In general, your property is not in bad condition to put into operation. Sufficient exploration and development, for the time being, has been done in the "76" mine to be able, after a small amount of rehabilitation and preparatory work has been done, to start production. When production is upon a profitable basis, further exploration and development must, of course, be done to assure continued operation.

The mill and power plants have ample capacities to take care of immediate needs. Some repairs are necessary however before satisfactory results may be expected. Those will be discussed later in detail.

MINING PROPERTIES

"76" Mine: This property is developed by an adit tunnel level approximately 550 feet in length on the vein; on the 65 foot level below the tunnel, a 30 foot drift to the southwest and a 60 foot drift northeast; on the 120 foot level, a 130 foot drift to the southwest and a 240 foot drift northeast, with a raise up some 40 feet above the drift at a point about 155 feet northeast of the shaft; on the 180 foot level below the adit tunnel, a 65 foot drift to the southwest and a 150 foot drift to the northeast. There is a small sump below the 180 foot level at the bottom of the shaft.

Some stoping has been done above the adit tunnel. However, there appears to be considerable stoping ground left between the tunnel level and the surface and it is from that block that immediate production should be started.

Between the 120 foot level southwest and the adit tunnel practically all

MINING PROPERTIES

developed ore has been stoped. To the northeast however, there is a good block of ground, above the level, available for stoping between the shaft and the 40 foot raise. That block should be placed in production along with the block above the adit level.

Above the 180 foot level southwest of the shaft no stoping has been done. That area should be investigated further as financial and operating circumstances will permit. To the northeast of the shaft between the 180 and 120 foot levels, practically all developed ore has been mined. It was from that area that you have made your best production.

The 180 foot inclined shaft below the adit tunnel is not in bad condition, nor are the other workings which have been discussed. Up until the present, hoisting has been done with an air-driven hoist, now in bad mechanical condition, on the adit level. This practice should be discontinued as all air from present equipment is needed for drilling. A raise should be driven from the adit level to the surface, some 40 feet, and all hoisting should be done to that point with an internal combustion engine. The Bezzard hoist is available for that use. Waste should be dumped on the surface by the hoistman. A portion of the raise should be timbered off to serve as an ore pocket, from where the ore hoisted would be trammed out of the tunnel to the present mine-ore bin, the shipping high-grade sorted out and the balance hauled to the mill for treatment.

The adit level should be cleaned out and track, air and water lines installed to the face. Necessary timber and chutes should be installed preparatory to stoping above the tunnel level.

The face of the tunnel has been swung into the hanging wall of the vein. As circumstances permit the face should be driven over to the vein, only a few feet, and further drifting carried on to the northeast.

the 180 foot shaft should be reconditioned, for bucket hoisting, to some 25 feet below the 120 foot level and a muck pocket made, on the northeast side of the shaft, below that level. It would be better to install rails and a skip in the shaft but, the financial condition of the company does not warrant that expense at present. A few hundred dollars spent in the shaft as now recommended willput it in sufficiently good condition for present needs. After the property is in profitable production the shaft can be reconditioned for skip hoisting.

The 120 foot level northeast should be reconditioned to beyond the 40 foot raise, some 155 feet from the shaft, and tract, air and water lines installed to that point. The raise should be driven to the adit level for ventilation, and for a second exit, to facilitate stoping of the ground between the level and the tunnel. Some timbering and chutes will have to be installed before starting stoping.

All stoping should be done by a selective method, such as first breaking down the waste, on the footwall side of the vein, into the stope; then stripping down the clean ore onto iron sheets. This method will give clean, efficient extraction with a minimum ore loss. An inspection of the old Tip Top mine showed some such method to have been used in that property when it was successfully operated many years ago. It is needless to say that stope widths should be restricted to only

sufficient room for mining in order to obviate unnecessary hoisting; likewise dr. holes should be short and lightly loaded to prevent excessive breaking and loss o. ore into the waste.

When the operation is paying, further exploration work should be done on the 180 foot level, both to the northeast and to the southwest. In the meantime the water should be held sufficiently low on the level so that it does not reach the timbers.

Apart from the above, the writer does not recommend any further work on the "76" until operations are on a profitable basis.

Bernard Property: No work is recommended to be done on this property for the present. The expense is not warranted. Pipe, skids and ladderway should be removed for use at the "76".

Eldorado: All work, apart from the necessary assessment work, should be held in abeyance pending profitable operation at the "76".

Fourth of July, Joker and Other Properties; None of these properties were visited as, with the limited resources available, it is unnecessary now to consider placing any of them in operation.

MINE EQUIPMENT The Foos engine, which is used to drive the horizontal air compressor, should be reconditioned. That compressor, as well as the portable compressor which can be used as a standby, should be checked over before they be needed. This can be done while the adit tunnel is being reconditioned. Likewise the Bernard hoist should be checked over when it is moved to the "76". The drill sharpener and drills should be gone over and necessary parts and accessories purchased.

MINE SUPPLIES Should be purchased in as large lots as are consistent with the work to be done; dinamite in tons lots, timber and lumber in truck loads; drill steel, tools and other supplies in proportion.

MINE PERSONNEL A competent mine foreman, experienced in the method of mining to be used, should be hired. At the start he could look after all the mine work on two shifts,-upon which basis it is recommended that the mine be operated. A good hoistman on each shift can do the hoisting, steel sharpening and take care of the engine and compressor. Three drill crews on each shift are recommended. One or two trammers will be needed, as will probably be one or two muckers, apart from the drill crews who ordinarily will do a large part of the mucking. Work should be carried on six shifts, of seven and one-half hours each, per week to comply with the wage-hour law and to avoid overtime pay.

MILL In general the mill is in good operating condition. The crushing equipment will do for the time being but, after the property is in profitable operation, some changes should be made in that department. Several minor repairs and changes can be made in the mill while the mine is getting into production.

POWER PLANT The Diesel engine should be thoroughly overhauld and improvements made in the water cooling system. A few necessary repair parts should be carried in stock. The pulley should be changed in order that the engine and generator may run at their proper respective speeds.

MILL PERSONNEL Both the mill superintendent and the diesel operator appear to be capable. No changes are recommended.

MILL OPERATION The mill should be operated primarily for treatment of ores from the company's properties. If that source of supply, due to the narrowness of the vein, is not sufficient to keep the mill in continuous operation for at least one shift per day, some 16 tons, then outside custom ores could be accepted to make up that tonnage. Or, if it be deemed advantageous to operate the mill two shifts per day, then custom ores could also be accepted to make up the balance. As the diesel engine is old and will require more than ordinary attention while operating, it is not recommended that the mill be run more than two shifts per day until other, or additional power be installed.

SUMMARY OF RECOMMENDATIONS The following suggestions are made in chronological order, however several of them should be carried on simultaneously:

1) Survey the "76" mine and have plan and elevation made on a scale of one inch to 20 feet. This is necessary in order to direct mine work efficiently. At the same time run a stadia line along the outcrop some 1000 feet to the northeast from the adit portal; tie in, with stadia, the Bernard, Eldorado, Joker, Fourth of July, old Tip Top and any other nearby workings in order to plan future exploration, development and operation.

2) Drive a raise above the adit level to connect the 180 foot inclined shaft to the surface. Install an ore-pocket in the raise above the adit level. Install headframe and waste dumping facilities at the shaft collar. Move the Bernard hoist to the shaft collar and install.

3) Recondition the adit tunnel to face and install track, air and water lines.

4) Put in necessary timbering, chutes and manways above the adit level and start stoping there.

5) Install grizzly, sorting platform and small shipping-ore bin at the mine-ore bin.

6) Recondition the 180 foot shaft, for bucket hoisting, down to 25 feet below the 120 foot level.

7) Install a muck pocket on the 120 foot level.

8) Recondition the northeast 120 foot level to beyond the 40 foot raise, some 155 from the shaft; install track, air and water lines.

9) Connect the 40 foot raise to the adit tunnel.

10) Put in necessary timbering, chutes and manways and start stoping between the 120 foot and adit tunnel levels.

11) Continue driving northeast on the vein in the adit tunnel.

12) Recondition 180 foot shaft to the bottom,-for either bucket or skip hoisting, depending upon the financial condition of the company.

13) Continue northeast and southwest drifts on the 180 level.

14) Utilise the diesel operator and mill crew to condition the Foos engine, both compressors and Bennard hoist.

15) Recondition diesel engine, change pulley, make necessary minor changes and repairs in the mill.

16) Improve cooling water system.

17) Improve camp conditions by making bunkhouse comfortable and vermin proof.

CONCLUSION

Your properties, especially the "76" which is sufficiently developed to study, appear to be very similar to the old Tip Top which was reported to have been quite successfully operated in the early days.

The only way to determine whether your properties can be placed in profitable operation is to proceed along the lines recommended above. The writer believes that, if you will follow these suggestions and conduct all operations as economically and efficiently as possible, you will be successful in your venture and not only recouperate your present investment but also realize a good profit.

Very truly yours,

(SIGNED) S. J. CLAUSEN, JR.

Occasionally, or I might even say rarely, a mining venture is so fortunate as to encounter usually favorable features early in operation, and in such case the program may be consummated within the original estimate. In your specific case, we did not, nor did we expect to, encounter high grade ore at the commencement of operations. We do have, however, several very good showings, and I anticipate that we will, with a comparatively small amount of additional working capital, be able to put the properties into profitable production. The work done, the showings encountered, and the assay record of the incomplete sampling done up to the time of the suspension of work, certainly bear me out in this belief.

The rehabilitation of the "76" Mine has gone ahead as well as I anticipated, and, except for a few minor unforseen difficulties, all of which have been overcome, there is no cause for complaint as to the manner of doing and cost of what has been accomplished.

The power plant repairs and rehabilitation have cost more, and have taken a considerably longer time than expected, but those are well under way, and, when more capital is available, can be completed in good order. I wish to mention here that in repairing and rehabilitating the power plant, we have gambled to the extent of repairing parts which, had funds been available, would better have been replaced with new parts. This practice, however, is quite common in mining ventures, and, if realized and taken into consideration, is considered good business until a property may be upon a selfsustaining basis.

The mill is, I might say, now in much better operating condition than when it s rehabilitation was started. However, like the power plant, there were some repairs made which could have been done in a more thorough and better manner if funds had been available. In particular, it would have been better to have installed a new crusher at this time, but under the circumstances I believe we are doing the proper thing in attempting to get by with the present crusher installation until the operation provides funds for a replacement with a more appropriate unit.

STATUS OF PROGRAM RECOMMENDED.

Referring to my report of June 26th, page 5:

1) The skelton survey recommended has been done, and working maps from this survey have been used in the operation to date. Those maps are not complete in that the stopes above and below the "76" adit tunnel have not been surveyed and plotted, but have only been sketched in on the working maps. All sampling and assays have been spotted on these sketch maps, and are sufficiently accurate for working purposes. When operations are again started, I would recommend that two or three days' surveying be done to complete the maps, so that copies may be made and sent to the St. Louis office.

2) The raise has been driven and timbered, some 75 feet which connects the 180 ft. inclined shaft to the surface; ample capacity, some 40 tons, ore pocket has been constructed above the level; the head frame is installed, but one or two days' work will be necessary to complete the waste dump facilities at the shaft collar. The Bernard hoist is at the shaft collar, and can be installed on a timber foundation within a day or two. In driving the raise, exceptionally loose ground was encountered during the last twenty feet. That condition required slower work and more timbering in order to avoid excessive caving. However, the whole job is very well done, and will give excellent service when utilized.

3) The adit tunnel has been reconditioned to the face; track, air and water lines installed, and the whole level well rehabilitated. In addition, the face was turned to the east, the vein encountered, and some twenty odd feet of drifting has been done on the vein. In that drifting, while no pay ore has been encountered, the vein shows strong, and the further driving ahead of the face should be an excellent exploration when circumstances will permit.

4) Practically all the timbering, chutes and manways have been installed above the adit level, and stoping started in several places when work was suspended. In some of the places so prepared there are very good, though narrow, showings of ore upon which to start shoping. In one place in particular, there are excellent indications that good grade of ore will be encountered rather quickly when operations are resumed.

5) Nothing has been done toward the carrying out of this miner feature.

6) The shaft has been reconditioned as recommended, and only lacks the small detail of installing new guides to complete the program. The material is on the ground, and that work can be done in a very few days. While reconditioning the shaft, it was deemed expedient to take off all the humps, and put the shaft in first class condition for all time. That was done.

7) This feature has had to be held in abeyance until the raise could be driven, head-frame and hoist installed, and the shaft reconditioned. However, this item can be completed within two weeks when work is again under way.

8) Like item 7, this feature is also in abeyance, but can be completed within the same two weeks estimated for that feature.

9) & 10) Both in abeyance for reasons discussed.

11) Already discussed.

12) & 13) In abeyance.

14) Completed.

15) Already discussed.

16) Nearly completed; the concrete tank and cooling tower are built; the heat-transfer unit fabricated and ready for installation.

17) In abeyance; three wells have been cleaned out, and are in good condition.

MINING PROPERTIES:

"76" Mine. Fully discussed under preceding heading.

El Dorado. Although no work was contemplated under the original June re-opening program, it has since developed that a reliable leaser has made an attractive offer to reopen the El Dorado property. In view of this, it was deemed advisable to install a hoist and head-frame and to recondition the shaft. The hoist is set on a concrete foundation; the head-frame is framed and ready to raise and bolt together; timber for reconditioning the shaft, new guides, and a bucket for the shaft, are in order.

Jackson Tunnel. The tunnel has been cleaned up, track laid, and the necessary timbering installed for a length of 270 feet to the cave-in. The cave is being spiled through, and does not now appear to be at all serious, but rather consists of slabs and sluffed material from the old stope above. Some good looking ore is showing up in the muck that is being taken out from the spiling operation. This ore indicates that further exploration in the Jackson tunnel will probably develop good ore for milling operations.

Bernard, Fourth of July, Joker and other properties. No work has been done at any of these workings.

MINE EQUIPMENT.

All has been overhauled, and put in as good shape as possible. The air drills are none too good, and when circumstances permit should be replaced with new equipment.

MINE SUPPLIES.

Practically all purchased have been used up before the suspension of work on July 16th, and when work is resumed, supplies of every nature must be purchased.

MINE PERSONNEL.

A very competent mine foreman, Ed Hussen, and a fair crew of men were doing the work up to the shut-down. A new crew will have to be engaged when operations are started again.

MILL.

There is still a small amount of work to be done, all of which can be completed within one week.

POWER PLANT.

Discussed above; the pulley has been changed, and it is hoped that the repairs made will give good service until further replacements are justified. About two weeks will be required to reassemble the Diesel engine and have it operating.

MILL PERSONNEL.

All the crew were discharged on September 16th, and will have to be replaced.

MILL OPERATION.

No change since comments of June 26th other than that a small amount of custom ore has been arranged for, and plans are now being made to provide the bulk of the tonnage with ore from the main Tip Top dump around the hill to the east from the mill. Those plans will be discussed under a separate heading below.

BOARDING HOUSE.

An excellent boarding house was in operation when work was suspended. It is recommended that arrangements be made with the same party to return when work is resumed.

MINE DUMPS.

While at the property on the 23rd, the writer investigated and gave careful consideration to the advisability of milling ore from either or both of the Tip Top dumps. Although the tunnel dump at the head of the mill is more accessible, that feature is out-weighed by the quite apparent better grade of the main Tip Top dump, and also by the much larger tonnage available in the latter dump.

There is an old grade, or road-way, leading from the main Tip Top dump to the head of the mill which, with a very small amount of work, can be reconditioned readily for track installation. A line of levels should be run over the road bed so that the track may be installed on a uniform grade. That survey can be made in less than a day, and at the same time as the stope survey recommend to be made at the "76".

750' of 16 lb. track, together with fish plates, bolts, spikes and ties, three roller-bearing mine cars, a mule to pull them, wheel-barrows, 6" picks and shovels, shoveling sheets, timber for a 50-ton bin at the dump, and timber for an ore shoot at the head of the mill will have to be purchased in order to work the dump.

The outlay for the above purchases and installation is estimated at $1,000.00. The installation will require approximately two weeks' time. The writer recommends that this installation be made as soon as it is decided to reopen the properties, as examination of the dumps, together with study of previous dumpsampling indicates that an ample tonnage, at a very small cost figure, can be obtained from this source, not only to make up full mill tonnage with that which will be obtained from the "76" Mine, but also to provide further working capital and a good profit on the whole operation.

CONCLUSION.

The writer has nothing to add to the last sentence of his report of June 26th, which states "The writer believes that if you will follow these suggestions and conduct all operations asdeconomically and efficiently as possible you will be successful in your venture, and not only recoup your present investment but also realize a good profit."

Very truly yours,

(SIGNED) S. J. Clausen, Jr.

SJC:MA

CC: Orig. & 2 to : Mr. Findly
1 copy to Mr. MacDonald

copy

LA BAJADA EXPLORATION ENGINEERING AND EQUIPMENT CORPORATION

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Index.

Phoenix, Arizona
October 29th, 1938.

A.L.Flagg,
Consulting Engineer.

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INTRODUCTION.

The examination on which this report is based was made between October 17th and October 21st, inclusive, 1938.

The following data were submitted for use in this connection:

Reports by:

G.W.Alsdorf	Phoenix, 1916
H.E.Armitage	Prescott 1911
E.M.Clark	Reno, Nev 1918
J.S.Coupal	New York 1917
J.S.Coupal	Phoenix 1934
E.M.Muter	Prescott 1916
S.A.Shappel	Phoenix 1935
H.A.Sill	Los Angeles
G.A.Thayer	Phoenix 1916

(There were no maps or sketches with the reports)

Extracts from U.S.Geological Survey Bul.782
A Discussion of assays on Tip Top Ore, from 1887 to 1922
by Frank E. Wager, assayer at Tip Top.

Daily Mill Reports, May 1 to October 30, inclusive, 1936.

Pay roll distribution sheet, June 16 to 30, 1936

A claim map, unsigned.

A sketch (elevation) of new "76" workings

Report of Ore Test by Southwestern Engineering Corp., 1926.

Report of Ore Test by Southwestern Engineering Corp., 1927.

Smelter liquidation sheets covering 24 shipments

Since the reports mentioned above gave all the pertinent data regarding location, accessability, water supply, and development on the Tip Top Group prior to the entrance of the La Bajada E.E.& E. Corp., into the district it is unnecessary to repeat such matter in this report.

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PROPERTIES.

La Bajada E. E. & E Corporation is operating at present the "76" Group of unpatented mining claims, under a lease and option agreement. The Corporation also has a lease agreement, as well as a small stock interest in the Tip Top Group, consisting of three patented and three unpatented mining claims. Neither of the contracts mentioned were reviewed by the writer, but they were discussed with Messrs Eggers and McDonald.

It seems advisable to comply with the terms and conditions of the lease and bond on the "76" Group, completing the payments as called for and securing the title. There is every reason to expect that the balance of the purchase price, and in addition, some profit can be taken out of this group of mining claims.

The arrangement with the Tip Top owners is not satisfactory and should be changed as soon as possible. The rental for the use of the mill equipment is prohibitive and the stockholders in the Tip Top should realize this. Should an extensive development program on the "76" Group open up a sufficient tonnage of mill ore it might be more economical and profitable to build a mill at the "76" if the Tip Top terms cannot be modified.

BUILDINGS.

There are buildings enough on the Tip Top ground to accomodate a crew of twenty men and profide administration headquarters also. Practically every building needs some repairs. It is to the best interest of the lessee to repair these buildings if he proposes to continue with work at the Tip Top mine or in the mill. There are no buildings onthe "76" Group.

WATER SUPPLY.

Water for domestic purposes is obtained from shallow, dug wells along Cottonwood Wash, which crosses the properties. This is adequate for immediate needs, However, while the ground water stage is low, advantage should be taken of this opportunity to deepen these wells.

Water for milling purposes can be had for a time from the Tip Top shaft. Nothing is known about the qualities of this water, or how it may effect the flotation. The "76" winze is reported to make four thousand gallons per day. This may or may not increase as depth is gained. Whatever water is produced can be delivered by gravity to the head of the present mill. A large capacity earth and rock reservoir with a concrete lining could be built here at low cost.

MINE EQUIPMENT

The mining equipment belonging to the Corporation is practically all at the "76" Group. The surface equipment seems to be adequate for all immediate requirements. The Foos engine, which drives the stationary air-compressor is said to need a new ring. It might be helpful if an air filter is added to the compressor intake. These are small matters, however. When conditions warrant and sinking in the winze is resumed the present air hoist can be used for another hundred feet. From beyond that depth hoisting should be done with heavier, more economical equipment from the surface. The location of such new working shaft can be determined only after more laterial work has been.

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The drilling equipment on the job is not satisfactory. All the machines show signs of excessive wear. Efficiency must be low and repair costs high when such equipment is used. Air and water hose are badly worn and many-patched. The columns and arm are not usable. Leasers may worry along with such equipment but if used on company time they will be found to be very expensive.

The compressor at the mill, a Chicago Pneumatic "hot-head" type machine should be replaced by something efficient and dependable.

MILL EQUIPMENT.

The most striking thing a bout the mill is that when it was shut down the equipment was properly care for. Usually, in small plants, when the shut-down time comes everything is abandoned where last used with no thought for the future.

The necessity of a secondary crusher is clearly indicated by the large amount of coarse material in the fine ore bin. No effort was made to determine the amount of oversize for a casual observation indicates that much of it was too coarse for ball mill feed. Daily mill reports state frequently that time was loss due to choking of the ball mill. The daily capacity of the mill will be materially increased, a saving made on balls and liners, and, in all probability, a more uniform recovery made if a secondary crusher is installed. An Allis Chalmers #189 fine crusher or its equivalent is recommended.

The ball mill appears to be satisfactory though it has been operated out of alignment. Daily mill reports indicate that it required relining after less than a month's use. Presumably the liners are now in fair condition.

It is reported that the Dorr classifier, which operates in closed circuit with the ball mill was not satisfactory in its operation. There is nothing to be seen about the operating mechanism that is not normal or in any way faulty. The unsatisfactory performance was probably due to lack of proper adjustment, which can be corrected easily.

Conditioning equipment, flotation cells, tables, filters and other miscellaneous equipment seems to be satisfactory.

The engine was responsible for many delays while the mill was in operation according to daily mill reports. In the last half of June 1937 there was over 35% lost time charged to engine troubles. No superficial examination will determine why the engine did not operate at normal. It may or may not be for causes easily corrected.

There is no reason why used equipment should not be purchased for either mining or milling. However, such purchases should be made with caution and usually only reconditioned and guaranteed equipment should be considered. If quality and condition are made secondary considerations to price the result is very apt to be disappointing. In view of the short time this particular installation has been used at Tip Top and considering the lost time reported (See Table 11) the logical conclusion is that the equipment was selected on a price basis. The result is reflected in the unsatisfactory results of mill operation. The practice of economy in making capital expenditures is not criticised, but the purchase of equipment of inferior quality is not economy.

THE "76" GROUP.

Present operations of the La Bajada E.E. & E, Corporation are confined to the "76" Group, which lies to the northwest of the Tip Top Group. There are no company operations. There are three different leases in force which are very favorable to the company.

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The oldest major development on the "76" Group consists of three adit levels on the Fourth of July claim. There is no accurate record of the production from these workings. On the "76" claim there were two short adit drifts driven in earlier days. On the Bernard which is on the south-west end of the group there were lesser workings, done in the early part of the camp's history.

There is no work in progress on the Fourth of July claim at this time. On the Bernard a lease is in force. An inclined shaft is being sunk in wall rock from which a crosscut will be made to the vein.

Exploration by the La Bajada company has been confined to the "76" claim. The area above the two old adits mentioned above was pretty well stoped out years ago. Later a new adit was begun below these. It had been driven on the vein in a north-easterly direction something over one hundred feet. Connection was made with an old shaft sunk at the portal of the lower of the two adits mentioned above. Then a winze was started and carried to a depth of about 35-ft.

The La Bajada company has continued the adit to a total length of 506 feet. The winze has been continued to a depth of 180-ft with a shallow sump below. Drifts have been driven from the winze at 60,120 and 180 foot levels. In all the company has done probably about 1000 feet of work on this claim. Stoping has been done here and there on the choice spots of high-grade ore. No regular stopes have been made. The gross production from this one claim during the tenure of the La Bajada company has been over $20,000, principally from high-grade shipments though some ore was milled.

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The general geology at the "76" seems to be much the same as at the Tip Top claims. Five distinct post-mineral faults, of moderate displacement were tentatively identified. In the reports referred to earlier in this report very little attention was pa to either structural geology ore ore genesis. Neither can be neglected in the further development of any group or claim.

In the explored area of the "76" vein system the vein is usually narrow. The strike is to the northeast with a dip of about 60 degrees to the west. High grade occurs in overlapping lenses, usually on the hanging wall side. The highgrade quarts is often frozen to the hangingwall and often breaks through the wall. The only explored shoot seems to have a length of at least one hundred feet. The rake is to the north-east. The shoot persists to the lowest level. The mineable width seemd to average less than two feet. The highgrade quartz streak is from two to four inches in thick-ness. Present leasers are mining not over twelve inches of ore of which not to exceed 30% is being sorted out for shipment. It is estimated that this sorted ore will approxi-mate 200 ounces silver to the ton. The rejects, or mill ore, is stored for company account.

The "76" and Fourth of July are the only two shoots of ore yet proven on the property. Neither of them is very long but it is reasonable to expect that they will be persistent to depths comparable to the depths attained in the old Tip Top. Whether other shoots will be developed on these claims, on the Silver Link and Bernard is problematical. There is no surface indication of a shoot on the Silver Link.

OPERATING DATA.

Very little complete data covering the past operations of the La Bajada company are available. Fragmentary records do not supply enough information to enable one to make a very satisfactory analysis of costs in any department. In Table III is given what seems to be about the best possible estimate of costs in the mill. However, it was necessary to make assumptions regarding some items. In addition it covers only fifteen days.

Even less information is available regarding the mines. Therefore any

estimates made may be found to be quite at variance with actual costs.

Smelter liquidation sheets covering twenty-four shipments of sorted ore and concentrates were available for study. The first shipment was received at the smelter March 23d, 1937; the final shipment August 4th, 1938. Shipments have been made since that date but the settlement sheets were not available. The following analysis was made of these shipments:

A

Shipments	24
Dry tons	212.7685
Total ounces silver	51953.45
Total ounces gold	41.68
Total pounds lead	6640.88
Gross value of metals	$41845.32
Total freight paid	1634.20
Net paid by smelter	29250.67
% gross value realized	69.88%

B

	% Recovery	Quantity	Unit Price	Total Value
Silver	85	44,160.43	77.5¢	$34,224.33
Gold	80	33.34	$32.00	1,066.88
Lead	60	3,984.53	4¢	159.38
Total gross recoverable by milling				$35,450.59

In the above table division "A" is a concise summary of the record of ore shipped. Actually only the silver was paid for because the amounts of gold and lead in the ore were below the minimum required for pay in the current smelter schedule. However, in milling some of these values will be recovered, Daily mill reports show no recoveries other than silver therefore the recovery of gold and lead in section "B" are only estimates. The mineralogical associations are such that one is justified in making the assumption that the precious metals and the lead are closely associated and that the recoveries together about in the percentages assumed above in section "B" are quite reasonable.

Section "B" is given only for the purpose of comparison, to further emphasize the difference between returns from shipped and milled ore. It is impractical to mill ores of such high silver content. In fact, some smelters will not accept such highgrade ore except at an increased base or special treatment rate. In the process of mining ore for a mill the large pieces of obviously highgrade ore should be sorted out and accumulated for shipment direct to the smelter.

An analysis was made of mill operations from May 11th, 1936 to October 30th, 1936, inclusive. The results are tabulated below.

Table II

Total possible milling hours	4176.00
Total hours mill operated	2739.14
Percent total operating time	65.59

Operations by months.

Month	Total Possible hours	Total Hours running	Percent Running time
May	504.00	258.65	57.67
June	720.00	322.75	44.82
July	744.00	421.75	55.68

Operations by months. (cont'd)

Month	Total Possible hours	Total Hours running	Percent Running time
August	744.00	562.00	75.53
September	720.00	572.25	79.47
October	744.00	601.74	80.74

It is logical to expect that during the first 60 days of the operation of any new mill there will be lost time, low recoveries and shut downs for rearrangement of flow-sheetand other adjustments. On these grounds, then, the record of actual time operated during the first fifty days is not out of line, except that the records show that the loss of time was not on account of any of the usual causes. According to the records the recoveries, though erratic, were generally satisfactory during the initial or "breaking" in period.

Concentration ratios were usually high and the mill feed practically always below what is the actual no-profit or "dead-line" limit.

The record of mill operations would indicate that the mill was operated by competent men, to whom no blame can be attached for the failure of equipment.

A distribution sheet covering the pay-roll from June 16th, 1927 to June 30th, 1937, inclusive, is summarized below and the milling cost calculated from this incomplete data.

Table III

Distribution of pay-roll:

Milling	$ 338.31
Mining	491.16
Mill repairs	106.11
Crushing	3.00
Truck	33.31
Miscellaneous	91.00
Superintendent	49.98
Burro haul	205.04
Total	$ 1318.27
Less mining and truck	793.80
Tons milled	370.20
Mill idle 4 whole days and fraction	
Total hours milling	201.00
Total hours down for engine repairs	127.00
% total time " " " "	35.28

Average cost of milling ore based on above distribution of the pay-roll ($793.80 / 370.20 T) $2.144 per ton.

This cost figure is exclusive of overhead, taxes, insurance, state compensation insurance, supplies, Social Security etc.

For overhead add	$ 0.75 per ton
For supplies add	0.50 per ton
For miscellaneous add	0.25 per ton
Mill rental	1.50 per ton
Final estimated cost of milling per ton	$5.144

If this combination of actual figures covering a limited period and the few assumed items is taken as a fair estimate of what has been done in the mill it will be seen that if the excessive rental charge of $1.50 for use of the mill is deducted the milling cost is not unreasonably high. It is believed that by adding a secondary crusher the mill operation will be improved, the capacity increased somewhat, and the costs reduced perhaps 25%. This will bring the milling costs down to a very satisfactory and economical basis.

RECOMMENDATIONS.

Narrow vein mining presents a series of problems not met within other types of mines where the ratio of pay ore to stope width is not so small. To maintain the proper balance between width of stope, value of ore recovered and the per-ton cost of development requires a great deal more care than is necessary in wide vein deposits.

Lacking definite cost figures for mining in this camp it is necessary to resort to estimates again. Assuming stoping ground in length (horizontal measurement) not less than 100-ft and a minimum of 12 to 14 inches of ore that will pay to mine, it is reasonable to expect that ore can be broken in the stopes for not to exceed $8.00 per ton.

Because of the narrow nature of the veins it is hardly advisable to set less than $3.50 per ton of ore milled as a development charge.

The cost of milling can be brought to $3.50 per ton in all probability when the suggested changes are made in the mill.

For taxes, all insurance, overhead and amortisation another $2.50 should be added, bringing the total cost of mining and milling of one ton of ore up to $17.50 per ton.

The current price of silver is 77.5¢ per ounce. If we figure on an 80% recovery of the silver we have 62¢ as the recoverable value of each ounce of silver shown by assay. To provide $17.50 for expenses each ton of ore stoped for milling must contain $17.50 / 62¢ or 28.2 ounces. Because of the gold, lead and tungsten content, which is not taken into consideration here, it is likely that this "dead-line" of 28 ounces can be reduced. It is possible too that the recovery may be greater than the assumed 80%. For estimating and planning purposes it is better to work with an ample safety factor. By similar reasoning approximately 14 ounce ore from dumps (on a delivery cost of $2.00 per ton) will constitute pay ore. It is believed that under a contract system dump ore can be sorted to 14 ounce silver or better and delivered at a receiving bin for $2.00 per ton, and yield a profit to the contractor.

Because of the hazards attendant upon narrow vein mining and the consequent relatively high "dead-line" for workable ore it is recommended that the company undertake to get all or most of its ore by a leasing system. Several plans are feasible by which the company will beneficiate the ores in its mill and the contractors make

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a very acceptable profit. In addition such a plan will attract careful miners insuring a steady supply of ore to the mill, and if the company has milling capacity, it will bring in outside ores from neighboring prospects.

On leases or contracts in the company property the operations can be controlled closely to prevent damage to the mine but no other supervision would be necessary. A man with wide experience as shift boss in small mines can probably be found who will meet the requirements, obviating the necessity of a resident mining engineer. Engineering can be supervised by a consultant making regular visits and being on call.

The unit of greatest potential earning power is the mill. It is necessary to review only a few cases of mines in remote locations attempting to pay out by simply shipping high grade ore to realize that only in very rare instances do such projects have a long life with a favorable balance in the end. The mines which have paid the most dividends over a long period of years are those which have processed their ore at the mine. A mill well operated is the solution of the present situation.

To operate the mill on a leasing or contract basis and handle the ores from various sources a bin divided into unit compartments of ten tons should be built at the head of the mill with facilities for weighing and sampling all ores delivered.

The "76" mine alone cannot supply one shift (15 tons) to the mill at present. Assuming that blocks 100-ft long by 100-ft high by 1.3-ft wide can be mined entire for mill ore such blocks will yield approximately 860 tons (100 x 100 x 1.3 / 15) of ore., or not quite 60 days (60 x 15 - 900) of mill ore for one shift only. Therefore it is necessary to do a considerable amount of development to open up and make available enough ore to keep the mill operating on more than one shift. Even if a 100 x 100 feet block of ore should stope out completely for 2.0-ft in width the resulting tonnage would be only 1333 tons which would supply the mill for one shift for 88 days or less than one month at capacity.

On the "76" there is one other partly proven area, - the Fourth of July claim. A small amount of development work will probably put that in shape for leasing or for contract mining. A trail from the present mill head to the Fourth of July claim can be converted into a fair road at a small cost, bringing the road to a lower level than the present lowest adit.

If a satisfactory arrangement can be made for operating the Tip Top property there is indicated quite an income from the ore in the dumps. The Sill report credits the Tip Top with 30,000 tons of combined dump and stope fill. This is divided into 20,000 tons of dump carrying 8 ounces of silver and 10,000 tons of stope fill carrying over 10 oz. silver. Tungsten occurs in both dumps and stope fill; 0.25% or 4.3 pounds WO_3 per ton in the dumps and o.36% of 7.2 pounds in the stope fill. Tungsten commands a fairly high price today, several dollars a unit (a unit is 1% above the usual price range.

Some of the dump ores have been milled and from the available records it would seem that the milling of several hundred tons has proven Mr. Sill's estimate of 8 oz in the dumps as conservative. No computations were made to determine the exact average silver content. It is believed that dump ore, graded up fifty to sixty percent, can be delivered at the mill head by contractors much cheaper than the company can handle it. If by so doing the volume is reduced as much as half there is still a very fine profit in the sumps and stope fill. In fact, 15,000 tons of 14 oz ore at 80% recovery will yield 67,200 oz silver which @ 77.5¢ an ounce is worth $52,080.00. With $2.00 for delivery and $3.50 for milling against it this ore should yield $3.18 or over $40,000.00 profit.

It is likely that the benanza ore body of the Tip Top claim is pretty well worked out. At the same time there is undoubtedly some good ore left in the claim. It is reported that there is considerable unstoped area above the 300 level on the original sheet. The Joker and South Tip Top should produce to the same horizons as the Tip Top, in fact the South Tip Top is but a faulted segment of the original Tip Top. If the South Tip Top produces to the same depth and for a corresponding sheet length as the old original Tip Top it will be a sizeable production. It would seem that the Tip Top group can produce a considerable tonnage of mill ore because there is still much virgin ground. With modern milling equipment on the property this should return a very acceptable profit.

Recommendations are summarized as follows:

1. Complete title to the "76" Group and make skeleton survey.

2. Prospect the "76" Vein system:

   (a) Drive present working adit ahead at least 50-ft.
   (b) Drive 120 level SW through fault.
   (c) If (a) and (b) prove a reasonable amount of mill ore expand development program.

3. Advance lowest adit on Fourth of July about 200-ft to prepare for leasing or contract mining.

4. Some surface trenching on "76" Vein strike on Silver Link and Barnard claims or make geological survey of the group.

5. Make skelton survey of the Tip Top group.

6. Advance South Tip Top lowest adit at least 100-ft and prepare for leasing or contract mining.

7. Advance lower Joker adit at least 100-ft and prepare for leasing or contract mining.

8. Crosscut to Joker from 200-level Tip Top.

9. Crosscut to Joker vein from 300-level Tip Top.

10. Rehabilitate mill.

11. Work dumps on contract.

12. Provide leasing (or contract)mining) program for Fourth of July, Joker and South Tip Top.

13. Establish commissary to supply leasers or contractors.

14. Plan to treat outside ores in the mill.

The attached schedules A - B - C show the estimated cost of each item of improvement or development recommended. Equipment costs are figured on the basis of new equipment, f. o. b., factory. Used equipment is not discriminated against but due caution should be exercised in its selection.

The development costs used may be reduced by contracting the work, or by making combination lease-contract arrangements.

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If the property is put on a producing basis at the earliest possible moment much of the cost of the program outlined above can be met out of the normal profits of operation.

CONCLUSION.

In spite of the fact that up to the present time the operations do not show a profit there seems to be no valid reason why the La Bajada E. E. & E., Corp., should not get into profitable production on the properties it controls, The project is beset with a certain difficulties not common to many mines but these same problems and some over greater ones were surmounted sixty years ago. The present problem seems to be one of the intelligent and economical management.

Respectfully submitted,

A. L. FLAGG,
Consulting Engineer

SCHEDULE A OF COSTS.

General	
Building repairs	1000.00
Commisary	500.00
Mine Equipment for "76"	
Drills:	
4 jackhammers @ $205	820.00
2 mountings @ 152	304.00
2 water tanks @ 27	54.00
1 self rotating stoper	210.00
6 sets water-air hose @ $45	270.00
Change dies in sharpener	75.00
Steel 1/2 ton	160.00
Timbers 1 car	850.00
Wedges	60.00
Rail, fish-plates, spikes (1 ton)	165.00
Air line	250.00
Skip	110.00
Hoist, outside	450.00
3 mine cars @ 110.00	330.00
Miscellaneous tools and equipment	500.00
Total	$ 4568.00

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SCHEDULE B OF COSTS

Estimated cost of mill improvements:

1.	Receiving bins for leasers ore, 10 tons each	750.00
2.	Picking belt and sampling equipment	1250.00
3.	Recondition trail (tram) from Tip Top dump at shaft to mill head with shute	200.00
4.	Drag line for lower dump	450.00
5.	Automatic samplers and drying equipment:	
	(a) Heads	114.00
	(b) Tails (home made)	25.00
	(c) Drying equipment	50.00
6.	Overhaul entire mill	500.00
7.	Secondary crusher installed	2140.00
8.	Assay equipment	
	Housing	125.00
	Furnace (oil fired)	310.00
	Button balance	225.00
	Misc. items	150.00
	Total	$6289.00

(Note: If dump ore is delivered on contract after sorting item 2 can be reduced to sampling equipment costs, less than half above estimated sum)

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SCHEDULE C OF COSTS.

Mine Development:

1.	Skeleton survey on "76" Group	360.00	
2.	Advance "76" adit at least 50-ft @ $6.00 plus track, air line etc., with possible crosscuts left and right at end.	500.00	
3.	Advance 120 level SW for 75-ft beyond winze, with possible xcuts L & R of 15-ft	300.00	
4.	Advance 180-level drift NE, distance depending on development at 120-level.	5000.00	
5.	Skip pocket at 120-level	125.00	
6.	Sink Winze 100-ft @ $20	2000.00	
7.	Advance lower adit 4th of July 200-ft. with possible 3 raises 75-ft.	1600.00 1500.00	
8.	Drift on 280-level "76" winze 300-ft @ $12 with 3 raises 100 ft each and possible pump installation	3600.00 3600.00 250.00	
9.	Surface trenching on "76" Vein system	250.00	
A.	Skeleton survey Tip Top	420.00	
B.	Advance South Tip Top adit 100-ft	800.00	
C.	Advance Joker lower adit 100-ft	800.00	
D.	Crosscut from 200 level T.T. to Joker	2200.00	(a)
E.	Crosscut from 300 level T.T. to Joker	2612.50	
	Total	$ 6832.50	

(a) Distance unknown; estimated 275-ft.

THE "76" MINE OF

LA BAJADA EXPLORATION ENGINEERING AND EQUIPMENT CORPORATION.

The properties of La Bajada E E & E Corporation are located in the Tip Top mining district, along the southern border of Yavapai county, in Arizona, about fifty-four miles from Phoenix. There are seven unpatented mining claims in the group, which is commonly known as the "76" group.

Except for the last eleven miles, which is unimproved mountain road, the whole distance between Phoenix and the mine is over good roads.

The Tip Top district is at the southern tip of the Bradshaw Mountains, in an area characterized by rugged topography, the result of vigorous erosion. Steep sided valleys, rough surfaces with little soil and scant vegetation are the principal characteristics. Water on the surface is not abundant. Cottonwood wash runs intermittently, depending on the season. Drainage is south to the Agua Fria river. Water has been encountered in most of the mines at no great depth from the surface though in no large amounts. There is no data regarding water levels or quantities in various mines.

The principal formation of the Tip Top district is a complex system of pre-Cambrian granitic to schistose rocks. These are cut promiscuously by aplite and pegmatite dikes, the latter being very abundant. Just above the Tip Top mill, crossing Cottonwood wash, is a wide conspicuous white dike of rhyolite porphyry. Some basic dikes occur. No detailed study has been made of the geology of the district. The subject is treated briefly in U.S.Geol.Survey Atlas, Bradshaw Mountain Folio No.126 (1905) and in U.S.Geol.Survey Bulletin 782, "Ore Deposits of the Jerome and Bradshaw Mountains Quadrangles, Arizona" (1926). The veins are fairly well-defined fissures with NE -SW strikes, usually dipping to the NW. Veins in this district are characteristically long. The only gangue material is quartz, probably of two generations. In the "76" the quartz is sometimes frozen to the hanging-wall. The identified ore minerals are: arsenopyrite, pyrite, sphalerite, galena, cerargyrite, proustite, pyrargyrite, argentite and native silver. Oxidation extends to approximately two-hundred feet below the outcrop. The gold content is almost negligible.

The Tip Top camp is one of the oldest in Arizona. The production from 1875 to 1886 was approximately 4,000,000. During this period the "76" property was discovered but was not extensively operated. Only one claim had any considerable production. The production since 1936 is made a part of this report.

Development work on the "76" claim amounts to about 1500-ft, exclusive of stopes and rises. The adit level is approximately 550-ft long. In the development plan a winze was sunk 180-ft below this adit, beginning at a point about 80-ft from the portal. In the summer of 1939 a raise was made above this winze to the surface and a gasoline hoist installed on the top. Levels have been driven both north and south from the winze at points 60, 120 and 180 feet below the adit level. The south drifts are short. On the 60-ft level the north drift is about 60-ft. On the 120 and 180 levels the drifts are much longer but in both levels they are caved something over 100-ft north of the winze. Though a small amount of stoping has been done from south drifts the major production has been from stopes between the 180 and 60-ft levels north of the shaft.

The "76" workings have never been sampled systematically. There is some ore above the adit level, but nothing is known definitely about its value. The shoot south of the winze has been only imperfectly prospected. The greater part of the production tabulated on the accompanyinf sheet has come from the shoot which lie s mainly north of the winze. The greatest stopes sections are in this shoot and between the 180 and 120 levels, with a considerable amount above the 120, not reaching higher than the 60-ft level. Another ore shoot to the north is indicated but has not been opened up.

Just south of the air raise from the 180 level to the 120 level there is still some ore left in place in the back. This was sampled by the writer in July 1940. Eight inches of quartz on the foot wall side assayed 0.0% oz gold and 18.0 oz silver. The remaining ten inches on the hanging wall side assayed 0.20 oz gold and 16.8 oz silver. Twenty-two feet north a sample across ten inches of quartz gave a trace of gold and 4.68 oz silver. One other sample was taken on this level by the writer at fifteen feet north of the shaft. This was cut across twenty inches of crushed quartz and country rock. The quarts streak is about 5 inches wide. This sample assayed 0.02 oz gold and15.86 oz silver.

During January 1940, prior to retimbering on the 180 level, four samples were taken of the quartz streak in the underhand stope, just north of the shaft, which was open at the time. They were taken at intervals of five feet beginning at eighteen inches north of the south end of the stope. The widths sampled were 1.5 inches, 2.0 inches, 5.0 inches and 4.0 inches respectively. The silver content of these quartz samples in ounces was: 198.2; 104.12; 6.72, and 51.40. From this underhand stope the shipment assayed 0.01 oz gold, 2?1.0 oz silver and 0?2 % lead and 0.05 copper. This was made January 1940, and is the deepest ore mined in all the "76" workings of La Bajada.

In July 1940, when the air raise from the 120 level to the adit level was holed through the vein at this point, which was twelve inches wide, was sampled by the writer. The silver content was 43.0 oz and the gold 0.01 oz.

A great many other samples have been taken at one time or another but no record has been kept, hence the samples and assay results are of little value now. Those noted above are all properly identified on the map and by suitable markers underground, excepting the four underhand-stope samples. This area has been filled in.

One claim in this group, north of the "76" and presumably on the same vein, is known as the Fourth of July. This claim produced some very rich ore in the early days of the camp. There are three adits on this claim, close together and one above the other. Though no critical examination was made of these workings it would seem that this claim might produce again under a contract or leasing system, after some exploratory work has been done.

On the south end of the "76" claim is the Bernard claim which also had some production during the early days. There is a shallow shaft on the property dating back to the earlier period and another deeper one sunk in the foot wall from which no crosscut has yet been run to the vein.

Too little is known about other parts of the "76" Group to warrant any very definite statements. The general aspect of less extensively prospected areas is such as to encourage exploration. The "76" claim itself is definitely a promising prospect. Only one shoot has been explored to a depth of 180-ft. In the bottom the shoot seems to be as strong as ever. This shoot has been very productive as can bee seen from the tabulation of shipments. There is no reason why this should not persist to greater depths. The partially explored shoot on the south of the 18[illegible] winze will be encountered in the shaft when sinking is resumed. There are co[illegible]

indications in the adit level of a third shoot north of the one on which most of the stoping has been done. All things considered there is no reason to doubt the outcome of future development. The shaft should be deepened and drifts should be carried further north into the mountain. While this work is in progress on the "76" it would be well to to investigate both the Fourth of July and Bernard.

With adequate development there seems to be no reason why the "76" claim should not produce from 15 to 25 tons of milling ore a day. It is reasonable to expect some tonnage from both the Fourth of July and Bernard in addition. Therefore the immediate need of the "76" Group is intelligent and comprehensive development.

Respectfully submitted,

W. P. Flagg.

Consulting Engineer.

Phoenix, Arizona,
September 20th, 1940.

MAPS

Accompanying this report are five maps:

Plate I: A key map of Arizona, showing the relative positionof the Tip Top camp.

Plate II: A map prepared,from actual survey,by H.D.Phelps, in 1939, showing the relative position of the Tip Top and "76" properties.Mining claims (the approximate positions)were added by A.L.F.

Plate III:Elevation of the "76" workings.This is traced,in part,from a photostatic copy (reduced 1/2) of an elevation prepared in 1939 by H.D.Phelps.To the original drawing by Phelps additions were made by others,conversant with the workings in question.

Plate IV: Plan of the "76" workings,also traced from a reduced photostatic copy of an original by H.D.Phelps,in 1939. As in the case of the elevation,additions have been made subsequently by several persone and all are incorporated into this plate.

Following the maps there is a tabulation of the total production of La Bajada E E & E Corporation. This is made up of concentrates and raw ores,which are treated separately in the tabulation.

Under the heading "Ore in Sight" in the Harley A.Still report is the following paragraph:

> " There are three dumps on the Tip Top property aggregating about 20,000 tons that will average approximately eight ounces silver and .25% tungsten (WO_3).These dumps are easily available for milling and should yield a profit.In addition to this tonnage I have etimated 10,000 tons in stope fillings above the 200 foot level averaging slightly more than ten ounces in silver and .36% tungsten.There is also a small tonnage of ore in place above the present water level which will add somewhat to the ore reserves.I could not definitely determine the amount but I can conservatively estimate several hundred tons.The tonnage that can be included for the workings below the present water level cannot be given but if reliance can be placed in the statements of those who have worked in the mine and from reports of former officials of the company in charge of the development,this area should add materially to the above reserves!

In the Coupal report of 1917 it is stated: "there is approximately 20,000 tons of ore in stopes above the 200' level,part of which was drawn and sampled by a series of five chutes so placed as to allow drawing of the ore.The result of this sampling gave 14.1 oz silver and 0.20% tungstic acid."Regarding the stopes above the 200 level Mr.Coupal says: "there are several pillars of unmined ore left standing.I have estimated this unmined ore at 1000 tons. There is, in addition, about 8400 tons of stope fill in the area above 200 level."

Though there is no definite record to that effect it is quite reasonable to imagine that the dumps,sometime,have been sorted after a fashion. The mention of "fines" and "coarse" in the Wager assay record book would indicate that probably some sorting had been done.

Some of the dump ore has been milled since 1936 but no very great amount.So far as is known no ore has been taken from within the mine in a great many years.

The occurrence of tungsten is of some interest.So far as is known no effort has ever been made to recover tungsten from the milling ores.Some years ago high-grade tungsten in small lots was sorted out and shipped from the dumps. In the original operations the tungsten was not looked on as anything of value, in fact it had no value then.According to a report by a former foreman who was at the mine during its most productive period the wolframite was believed to be zinc blende and many blocks containing rather considerable quantities of wolframite were left standing in the mine.A number of fairly large specomens of tungsten ore,known to have been taken out many years ago have been seen.In some of these the wolframite was at least 60% by volume.It is quite possible that a considerable recovery of tungsten might be made from the old stopes.

It would seem that there is not less than ten to fifteen thousand tons of ore available in the dumps and in stopes above the 200 level which can be milled profitably.The high grade is known to have been stoped out from the 200 down to the 500,but when one considerers the costs of those days,particularly transportation it is reasonable to expect that there must be a considerable tonnage of ore left which as too low grade for profitable treatment in those days which could be handled now tiht modern equipment,both for mining and milling.

NOTES ON TIP TOP MINE.

The Tip Top mine is among the oldest mining locations in Arizona. Discovered in 1860, officially located in 1876, it yielded $4,000,000 in silver before 1885. Since the drop in the price of silver it has been worked only intermittently.

The property consists of three patented and three unpatented claims, located on Cottonwood wash, in Yavapai county at the southern tip of the Bradshaw Mountains. By road the camp is approximately 54 miles from Phoenix.

Briefly the gological structure is a series of precambrian sediments, recrystallized by dynamic metamorphism into an intensely folded schist. Subsequently the schish was intruded by acid magmas of the granite type. These intrusions show evidence of partial absorbption of schist in spots. Veins are true fissures cutting across the schistosity at a low angle.

The predominant gangue mineral is quartz. The ore minerals are pyrite, galena, sphalerite, cerargyrite, proustite, pyrargyrite, argentite, native silver and wolframite. The wonframite was the first to crystallize out and beautiful examples of the succession of deposition are to be found with the wolframite crystals conspicuously on the walls.

The veins of the district are usually narrow but long. The Tip Top vein, which is most extensively explored has a continuous ore shoot of 600 feet in length which has been developed to a depth of 800 feet. There is no other such extensive development in the whole district. The vein in this shoot had an average width of thirty inches.

Pertinent facts regarding the general geology, vein structure etc are to be found in U.S. Geological Survey Bulletin No. 782 (Waldemar Lindgren 1926) at pages 5, 12, 15, 16, 22, 23, 24, 28, 20, 31, 32, 41, 42, 43, 44. The Tip Top district in particular is described on pages 178-182.

Exhaustive reports have been made by H.E. Armitage (1911); G.W. Alsdorf (1916); J.S. Coupal (1916 and 1934); E.A. Clarke (1918); Harley A. Sill (1927) and others.

There are no maps of the underground workings available neither are there any very definite sampling records. However, in the Tip Top camp there is an old assay record book of Frank E. Wager, who was custom assayer in the camp from 1887 to 1920. This record contains many interesting entries concerning the old Tip Top mine but it is by no means a complete assay record of the property. There is one entry of exceptional interest entered in 1888. It is a Tip Top sample marked "800" assaying 265 ounces silver. If this sample came from the 800 level as might be indicated it is the only known sample from that level. This lengthy record shows that after the original operators ceased to work the property the average ore taken out by leasers was 560 oz silver. It also brings out the range of values in both chloride and sulphide ores. The former are strictly near-surface ores and range from 70 to 2100 ounces silver. The sulphide ores varied between 121 and 1760 ounces silver. In general the record is very interesting but it is of no immediate value as a guide to what values may be expected to be found standing or as stope fill in the mine now.

The Tip Top vein consists of two parallel veins, at least in the outcrop, at the surface. The major development is on the foot-wall vein. The hanging-wall v[illegible] has been stoped down only 150 feet. On the foot-wall vein, above the 800 level (adit) there are several blocks of low grade ore left which are said to assay 40 oz silver and 0.80% tungstic acid.

PRELIMINARY SURVEY

REPORT
on
SOURCES OF CUSTOM MILLING ORES
in
TIP TOP DISTRICT

Within a radius of three miles of the Tip Top mine are six groups of mining claims that are in shape to supply milling ores in varying quantities. On the topographical map I have shown the location of these groups, using different colors to show each group. A description of these groups is not possible in detail but the following will give an idea of the milling ores available from each.

FOURTH OF JULY GROUP.
Oscar Wager, Owner.

Distance from Tip Top	Name of claim	Type of Ore	Average per ton	Possible Production
3/4 mile	4th of July	Silver	20-30 oz	25T stopes must be put in shape.
1/2 mile	"76"	Silver	20-50 oz	25 tons
1/2 mile	Water Witch	Silver		No development
1 mile	El Dorado	Silver	20-50 oz	25 tons
1 mile	Arizona	Silver	14-50 oz	25T needs devel.

There are two other claims in this group that are undeveloped. This group could be relied upon to supply a minimum of 25 tons of 25 oz silver milling ore per day. The ore from this group would be almost identical in character to that of the Tip Top, and so would present no difficult metallurgical problem.

OSCAR WAGER GROUP.
Oscar Wager, Owner

2	miles	Wisconsin	Silver	20 oz	25T stopes need development
2	miles	Arnold	Silver		No development
2½	miles	Williams	Silver		" "
2½	miles	Marks	Silver		" "

These ores are very similar to those of the Tip Top so there would be no problem in their handling. This group could not be relied upon for steady production as it is not opened up sufficiently to have any ore blocked out. From workings on veins it appears that good bodies of mill ore can be developed.

FOY GROUP.
Lester and Herron, Owners.

2½	miles	Carbonate Queen	Silver	15-20 oz	25 T needs some development
5	miles	Foy claims 5 in number*	Silver	15-50 oz	25 tons

* On these five claims there are numerous workings caved in and considerable work would be required to put them in shape.

This group has produced some $140,000 in silver in high grade shipping ore. It is estimated that there are 700 tons of 25 oz silver ore on the dump. The claims

of this group are located on the Midway vein. This group could be depended upon to supply a minimum of 20 tons of mill grade ore daily. The ore is the same type as the Tip Top ore.

SILVER MUSEUM GROUP.

Owned by Johnson and Bessie Morgan

Distance from Tip Top	Name of Claim	Type of Ore	Average Value	Possible Production
½ miles	Gold Coin No.1	Silver	20-40 oz	10 tons
½ miles	" " No.2	Silver	20-40 oz	10 tons
5 miles	Swilling	Silver	20-40 oz	10 tons

The Swilling is one of the oldest mines in the district and together with the Gold Coin No.1 and 2 are now under lease to and are being developed by a Los Angeles company. They are sinking a shaft and are getting ready for production. The ores are the same type as those of Tip Top so present no problem. This group could be relied upon to supply a minimum of 20 tons of mill grade ore daily. Past production $250,000 mainly silver.

LITTLE JOE GROUP.

Mrs. Berger, Owner.

5 miles	Little Joe	Gold-silver	$20.00	25 tons

This property is shipping a car load of ore each week and have so far shipped seven cars. They are building up a large tonnage of mill grade ore. The ores from this mine are the same type as Tip Top and do not present any problems. This property can be relied upon to produce 15 tons mill ore daily.

SULLIVAN GROUP.

Bauer and Johnson, Owners.

5 miles	Sullivan	Gold-silver	$15-$25	25 tons
5 miles	DeGendt	Gold-silver	" "	Uncertain
5 miles	Bauer	Gold-silver	" "	Uncertain

These ores differ from the Tip Top ores considerably. The values are mainly in gold. They present no problems as the free gold could be plated and the sulphides, gold and silver, floated. This group could probably supply 15 tons of mill grade ore daily.

SUMMARY OF MILLING ORES AVAILABLE.

Fourth of July	25 tons
Foy Group	20 tons
Sullivan-Museum	20 tons
Little Joe	15 tons
Sullivan Group	15 tons
Total	95 tons

The above shows that the district is now capable of producing 95 tons mill grade ore daily, after a period of sixty days. With some months of development this tonnage stimate would probably be materially increased. It is my opinion that within six months from the time a mill is put in operation a constant supply of 100 tons per day of gold grade mill ore will be assured.

In addition there are four groups of claims that are owned by Mr. J.B. Johnson. These are not considered with the foregoing because of the difference in the type of ores and the metallurgical problems involved. A brief description of the Johnson group follows:

Table III

Distribution of pay-roll:

Milling	336.35
Mining	491.16
Mill repairs	106.11
Crushing	8.00
Truck	55.31
Miscellaneous	91.00
Superintendent	49.98
Burro Haul	205.04
Total	1518.27
Less mining and truck	795.80
Tons milled	570.20
Total hours milling	201.00
Tot.hrs down for engine repairs	127.00
% tot.time for repairs	35.28

Average cost of milling ore based on above distribution of the pay-roll ($795.80 / 570.2 T) gives $2.144 per ton milling cost.

This cost figure is exclusive of overhead,taxes,insurance,state compensation insurance,supplies,Social Security etc.It is estimated that such items would increase the cost by about 16%.

The above figures are based on distribution sheets covering the pay-roll from June 16th,1937 to June 30th,1937,inclusive, the only data available at the time of the investigation.

The mill will require some rehabilitation.A secondary crusher is needed between the jaw crusher and the fine groiding unit. This would surely increase the capacity of the mill.There are other refinements to be made about the mill as of 1938.Undoubtedly the building will need certain repairs now in addition to the work on the machinery.

From the data in hand it would seem that the Tip Top mine is a potential source of from ten to fifteen tons of ore already mined,either on the dumps or as stope fill. That there is probably considerable tonnage of mill ore still standing in the mine above the 500-ft level, (La Bajada retimbered the shaft to the 500 level with new C.P.in 1936) and there is a reasonable expectancy for additional ore in the Joker as well as other parts of the Tip Top holdings.In addition there is a mill,of a sort,already on the property and a sufficient supply of water on the property.

Respectfully submitted,

Consulting Engineer.

Phoenix, Arizona,
September 20th,1940.

In addition to the ore referred to above each report makes some brief mention of the parallel Joker vein. An examination of the limited workings on the Joker leads one to believe that this vein possibly may be as extensive and productive as the original Tip Top vein. It might fall short somewhat in length as compared with the Tip Top but there is no reason why the values should not persist to an equal depth. This vein lies about two hundred feet to the east of the Tip Top vein. It is said that a crosscut was started from some point below the 200 level towards the Joker but never finished because of the very hard character of the rock. With air drills it would be a simple matter to complete this crosscut and from that level explore the Joker vein.

In 1936 the Tip Top property was under lease to La Bajada Exploration Engineering and Equipment Corporation. This company built a mill on the Tip Top patented claim., the top of the mill being at the level of the 200 tunnel, an adit running north on the Tip Top vein to and beyond the 800-ft shaft. On the west side of the mill was a dump, material brought out through the adit but nothing is known of the origin of this material.

This mill has a rated capacity of 50 tons per twenty-four hours. The equipment consists of a jaw crusher, Challenge feeder, ball mill, two Wilfley tables, six-cell Sub-A flotation unit, thickener, filter and accessories. It is powered by a 4 cylinder Atlas Imperial full Diesel engine which is direct connected to a G.E. 3 phase 60 cy 440 volt 90 KW generator.

Water for the mill was obtained from the Tip Top shaft. A geared triple x pump, motor driven was installed in the shaft and lowered as the water was taken down. There is no record of the amount of water pumped but it is said that if the water is used only for milling the supply would be adequate for at least two years and in event of heavier rainfall might continue to supply the mill indefinitely.

During 1938 the writer made some investigations for La Bajada E E & E Corporation and on that occasion made an analysis of the milling operations, using such data as was available. Not all the mill records were available so the analysis covers milling operations from May 11th, 1936 to October 30th, 1936, inclusive. The tables are given below.

Table II

Total possible milling hours	4176.00
Total hours mill operated	2857.14
Per cent total operating time	65.59

Operations by Months.

Month	Total Possible Hrs.	Total Hours running	Percent Running time.
May	504.00	258.65	57.67
June	720.00	322.75	44.82
July	744.00	421.75	55.68
August	744.00	562.00	75.55
September	720.00	572.25	79.47
October	744.00	601.74	80.74

1. Antimony Group. Has some silver production. Good virgin ground. Ore same ty e as Tip Top.

2. Tungsten Group. Shipped tungsten during the war. Has good undeveloped showing of gold and silver.

3. Great Cross-cut Group. Will furnish 50 tons per day at present of gold an silver ores.

4. Gold Hill Group. Has produced gold ore of mill grade. Can furnish 25 tons per day now by extension of exposed ore breasts in the tunnels by development only. With six months development work would be in shape to produce 100 tons daily. This group would add materially to the tonnage of mill grade ores available in the section. The problem of handling these ores should not be difficult.

CONCLUSION.

There can be no doubt but that the custom milling ores available in this district are sufficient in quantity and value to warrant the installation of milling equipment to handle them. To equip to handle custom ores at the mill under consideration for the Tip Top, would, in my opinion, be worthy of mature consideration.

Signed: S. A. Shappell.

Note by A. L. Flagg, September 20, 1940. There has been some changes in ownership of the claims as given in the above report. The Fourth of July Group, in part, is the property of La Bajada E E & E Corp., The Silver Museum Group is not under uption to California people. While I have not visited all of the claims listed I am familiar with some of them. I believe the Foy Group will be able to produce all of 25 tons daily. Some shipments have been made recently and an inspection of the ground justifies the belief that it can be developed into a good tonnage producer. In general I am inclined to think that the estimated production from other claims is much too optimistic. However, with adequate development they will undoubtedly produce considerable ore. Little Joe was still shipping in late July but ceased in August. The trucking cost is too high but the group is a potential producer of mill ore steadily. There is certainly every reason to believe that a substantial tonnage of custom ore can be had when a mill is prepared to treat it.

Copy in Tip Top file

LEASING AND CUSTOM MILLING PROJECT

TIP TOP MINING DISTRICT, YAVAPAI COUNTY, ARIZONA.

———————oooOooo———————

The following project consists of three distinct parts, viz:

1. Lease on the "76" Group for development and production.
2. Lease on the Tip Top Group, and mill; for development and production.
3. Rehabilitation of mill, with necessary additions to treat custom ores.

In support of this proposal there is submitted:

1. A brief report on the "76" Group.
2. A statement regarding the Tip Top, compiled from old reports.
3. A brief statement of other potential sources of ore for custom treatment.
4. A description of the Tip Top Mill.
5. An analysis of milling operations in the Tip Top mill while under lease.