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325 Heard Building
Phoenix, Arizona
September 13, 1943

Fluorpar

TULLY - Ass't. Chief - Mining Section - Washington, D.C.

Re: Tonto Mining Co., Docket No. ND- 5701

I am enclosing herewith my Supervising Engineer's
Report under the above captioned docket.

T. P. LANE,
Supervising Engineer.

Enclosures

- 1 c Application with supporting data
- 2 c Supervising Engineer's Report
- 2 sketches
- 3 Assay Certificates
- 1 Letter from Continental Ore Co.
- 3 Letters from applicant

RECONSTRUCTION FINANCE CORPORATION
MINING DIVISION
REPORT OF SUPERVISING ENGINEER

Docket No. WD-5701

Date Authorization for Exam. Recd. Aug. 12, '43.

Date of Examination, Inclusive Aug. 16, '42

Date of Report September 13, 1943.

1. NAME AND ADDRESS OF APPLICANT

Name: Tonto Mining Company
Address: P.O. Box No. 26
Globe, Arizona

Correspondent: Roy H. Barnes
P.O. Box No. 26
Globe, Arizona

2. CHARACTER OF PROJECT

Development of Fluorspar Deposit.

3. LOCATION OF MINE

The mine is located in T. 6 N., R. 12 E., G. & S.R.M. in the Sierra Ancha Mining district, Gila County, Arizona. The nearest rail point is a siding between Globe and Miami, approximately 55 miles distant by road from the mine. The settlement of Tonto Basin is approximately 10 miles westerly from the mine. 32 miles of the road from the shipping point to the mine is paved highway, the next 19 miles is hard graveled road, and the remainder is mountain dirt road except the last two miles to the property which is extremely rough and barely passable. The mine is in a steep rock canyon and is reached by 1/2 mile trail from the road on the ridge above. About two miles of road would have to be constructed to make the property accessible. The road would be accessible at all seasons except during short periods of high water in Tonto Creek.

4. APPLICANT

The applicant is a Limited Co-Partnership, composed of two equal-sharing partners, Roy H. Barnes and David L. Roscoe. The property, comprising two parcels, was leased with option to purchase from two separate owners. The Lessee assigned the leases to the partnership under an overriding royalty and purchase price agreement. The partnership agrees to cover the stipulated minimum monthly payments to the property owners from funds other than those received from R.F.C. At the date of the examination the monthly payments were several months in arrears. The partnership has spent no money beyond travel and assaying on the property. The papers relating to the various lease agreements are included with the application.

Mr. Roscoe was not present during the examination.

He is described as an elderly man of means now retired.

Mr. Barnes is a middle-aged man who has been actively engaged in mine development and operation during practically all of his adult life. He would actively direct the affairs of the partnership and is competent to do so.

5. LOAN REQUESTED

The applicant requested a loan in the amount of \$15,000 but following discussion with this engineer, Mr. Barnes agreed that an expenditure of \$5,000 would suffice to prove or disprove the property, and the amount requested therefore is changed to this latter sum.

6. DESCRIPTION OF PROJECT

A. General Features

1. There are no mine working, mill, or other appurtenances, which are not confined within the applicant's ownership.
2. The proposed project would comply with State compensation or safety-first statutes.
3. The owners have not received any minimum monthly payment as stipulated in the original loan agreement. There are no other apparent legal discrepancies in the proposed project.
4. There are no impeded right-of-way facilities.
5. There is no likelihood of surface or sub-surface trespass during the project.

B. Existing Development

The property is developed by a few shallow shafts and surface cuts.

- a. The applicant furnishes a rough pencil sketch of the claims and the surface test holes, and the sketch which accompanies this report is based upon this map, with corrected orientation.
- b. Samples were cut with pick and moll and gathered upon canvas. Mr. Barnes took a split of each sample to Duncan, Arizona, where his father conducts an assaying business. A copy of his returns are attached herewith, and these show somewhat higher CaF_2 with, however, higher SiO_2 . Sample No. 4 showed a considerable discrepancy but upon repeating the assay Mr. Barnes' result checked with that obtained by Mr. Diehl for R.F.C.

- c. The main pit or shaft was caved but the other openings were accessible for inspection and sampling.
- d. General features of deposit, etc.

The property comprising four unpatented claims is located in a region of rugged topography in the lower part of the southwest end of the Sierra Ancha Mountains. The country rock is a coarse to fine-grained pink colored granite which in the subject-property is cut by an E-W trending quartz vein carrying fluorspar.

The workings consist of two shallow vertical shafts on opposite sides of a steep gulley in the central portion of the property (on No. 1 Vein), and several pits and cuts along a vein (No. 2 Vein) on and near the crest of a steep rocky ridge in the western portion of the property. The veins apparently stand vertically, and the alignment of the openings and cropping together with the general similarity of occurrence suggests that they might be the same vein. The vein, however, cannot be traced continuously between the two areas of development.

The overburden in the area of the two shafts on the No. 1 Vein is quite heavy and no outcrops are visible. The deeper of the two shafts is said to be 25 feet deep but it was filled to within 7 feet of the surface at the time of the examination. The vein in this shaft is approximately 6 feet wide and the vein material is a shattered inter-mixture of quartz and fluorspar, much of it finely granular or "sugary". The fluorspar is mostly white but some green and purple coloring is present. The vein walls are well defined though considerably altered and soft. Samples Nos. 1 and 2 were cut across the vein in each end of the shaft at the top of the fill. Sample No. 3 was shovelled from the shaft dump which contained approximately 15 tons. The shaft is on the edge of the narrow sand wash and apparently much of the dump has been washed away. A shallow shaft (8 feet deep) has been sunk some 35 feet westerly from the above shaft on the same vein. The east end of the shaft showed a vein width of 82". The vein material was similar to that noted in the deeper shaft except that a 24" band of barren fractured country rock occurs in about its center. Sample No. 4 was cut across the vein in this end of the shaft.

In the opposite end of the shaft the vein contained a thin band several inches wide of fair material on the north wall, and only occasional spots of fluorite in the balance of the vein.

The development on the No. 2 Vein consists of surface scratchings and several shallow pits throughout a distance of about 150 feet on the bold outcrop of the vein. The vein is quite hard consisting of ribs and bands of quartz and mixed quartz and fluorspar. Sample No. 5 was cut across the vein in a shallow pit. Westerly from this point the vein loses its identity and only occasional quartz seams in the country rock can be seen continuing along the vein-trend. Sample No. 6 was cut across the outcrop 100 feet easterly from Sample No. 5. Quartz and fluorspar croppings discontinue at a distance of about 50 feet east from Sample 6, and somewhat further easterly the steep hill slope is covered by a heavy overburden.

C. Proposed Development

The applicant proposes to sink the main shaft on the No. 1 Vein to a depth of 50 feet and to explore the vein at that depth. It is planned to pack by animals to the property and to do the development work with hand steel on a contract basis. Other development, and building of a road, ore bin, etc., would be a later program contingent upon obtaining favorable results in the first part of the program; and would require additional R.F.C. funds.

D. Equipment

There is no equipment on the property.

F. Ore Reserves and Values

There are no reserves of ore presently blocked out.

The workings on the No. 1 Vein indicate the presence of a body of rather low grade fluorspar with a high content of nonsortable silica.

Similarly the workings on the No. 1 Vein indicate the presence of a body of moderate grade fluorite material having a length of approximately 150 feet.

No work has been done on either of the showings to test the depth of the fluorspar.

A copy of a letter received from the Continental Ore Company, attached hereto, quotes a price on 75% CaF_2 with a maximum SiO_2 content of 15%. Samples Nos. 1 and No. 5 barely attain this grade of CaF_2 , and only Sample No. 5 falls within the allowable silica content. Mr. Barnes made a rough screen test of the material and found that a higher grade product could not be obtained by screening.

12. COMMENTS OF SUPERVISING ENGINEER

The fluorspar material presently exposed on the property is not a marketable quality, and its quality cannot be improved by sorting or screening. While it is possible that a concentration process might be worked out the small indicated size of the deposit does not warrant serious consideration of this factor.

There has been no past production of CaF_2 in the region and there are no other known prospects of CaF_2 in it.

A Development Loan is not recommended.

T. P. LANE,
Supervising Engineer.

No. 154 La

Phoenix, Arizona,

CHAS. A. DIEHL

Aug. 20, 1943.

ARIZONA ASSAY OFFICE

Phone 3-4001

815 North First Street

P. O. Box 1148

This Certifies That samples submitted for assay by Mr. T. P. Lane.

contain as follows per ton of 2000 lbs. Avoir.

No.	MARKS	Width	SILVER		VALUE (Oz.)		GOLD		VALUE (Oz.)		TOTAL VALUE Of Gold and Silver	% PERCENTAGE %			REMARKS
			Ounces	Tenths			Ounces	Hundths				Ca	Si	li	
1		71"										77.38	16.56		
2		70"										73.88	19.60		
3		Dump										61.84	22.05		
4		82"										39.42	42.89		
5		50"										75.55	11.75		
6		51"										68.84	19.16		

Charges \$ 42.00

Assayer ARIZONA ASSAY OFFICE

RECONSTRUCTION FINANCE CORPORATION
MINING DIVISION

REPORT OF SUPERVISING ENGINEER

Docket No. ND-5986

Date of Examination: May 2,3, 1945

Date of Report: June 6, 1945

1. Name and Address of Applicant

David L. Roscoe
Tombstone, Arizona

Correspondent:

Same

2. Character of Project

Development of Fluorspar Deposit.

3. Location of Mine

The property, known as the Packard Fluorspar mine, is located in T. 6 N. R. 12 E., G & S R B & M, in the Sierra Anchas Mining District, Gila County, Arizona. The nearest rail point is a siding between Globe and Miami, distant approximately 65 miles southeasterly from the mine. Fifty-five miles of the road from the shipping point is hard surfaced graded highway; the next eight miles is mountain road, generally winding and with steep grades, and the last two miles is recently constructed access road, which is very steep near the mine. This last two miles of road is adequate for development operation, but would need surfacing and reduction of some grades to make it suitable for ore hauling.

4. Applicant

The applicant is an elderly retired U. S. Army officer. Previous to his entry into Army service he was engaged in civil engineering work, and during his 24 years of Army service he directed construction work along with his regular Army

duties, retiring from the same with the rank of Colonel in 1920. Following his Army retirement he engaged in the oil business with apparently some measure of success, until 1938. Since that time his interest has been confined to mining ventures. Apparently his mining activity has been along promotional lines. He does not appear to have much knowledge of mining or experience as a mine operator. He is quite personable and gives the impression of having sound, practical business sense. He proposes placing the operating of the property in charge of a competent mining engineer.

The applicant appeared as a co-partner in a previous application for a loan on the subject property. This connection will be described more fully under "Description of Project."

5. Loan Requested.

Applicant submitted a request for a loan in the amount of \$15,000 and later amended the amount requested upward to \$20,000. (See attached letter with revised estimate, map, etc.)

6. Description of Project.

The applicant, together with a Roy H. Barnes, applied for a development loan on this property in August, 1943. (Tonto Mining Company, Docket No. ND-5701). This engineer examined the property with respect to the application and reported unfavorably on it, and the application for loan was declined in October, 1943. Reference is made to this Supervising Engineer's report in the above docket. Following the declination, the partners fell into disagreement and, the stipulated monthly payments having fallen in arrears, the property reverted to the owners. The present applicant then obtained new leases, on his sole account, and submitted an application for loan, dated April 25, 1944, and it was forwarded to Washington with comments by Supervising Engineer George Tweedy, of the Phoenix Office, Reconstruction Finance Corporation. When it was pointed out to the applicant that his supporting data did not contain any evidences regarding ore showings which were not present at the time of the first examination and that therefore a reversal of the first decision was hardly likely, he stated that he would do some trenching and other exploratory work upon the property, and requested that the application be held in suspense pending the completion of such work.

He then interested the Bureau of Mines in making the property the subject of an exploratory project, and the Public Roads Administration assisted by providing funds (\$1500.00) for the building of a two-mile accessibility road into the property. Upon the near completion of the Bureau of Mines project, the applicant requested an examination with respect to the application for loan, and submitted a revised program and estimate and amended the amount of loan requested from \$15,000 to \$20,000.

This engineer visited the property on May 2 and 3, while the Bureau's project was under way (the project was terminated on May 16th). The Bureau of Mines engineer in charge of the work, Mr. Joseph B. Cummings, co-operated fully with this office in making available his maps, assays, etc., and all of these data, together with the sampling and observations of this engineer, are incorporated in this report.

A. General Features.

- (1) There are no mine workings which are not confined within applicant's ownership.
- (2) The proposed project would comply with state compensation and safety-first statutes.
- (3) The property comprises four unpatented claims held by the applicant under two lease agreements with different parties. One agreement covers a single claim (Walnut), and the other covers three claims (Blue Bird Nos. 1, 2 and 3). Each lease specifies royalties to apply on the purchase price varying from 50¢ to \$1.20 per ton according to the character and quality of material shipped, and stipulates minimum monthly payments of \$25.00. Copies of the leases are attached to the application.

The claims were located many years ago and have been re-located a number of times, etc., and although their present boundaries are not clearly fixed, the important ore showing appears to be adequately covered. However, a dispute has arisen over the ownership of the Walnut claim. The owners of the Blue Bird claims assert that the Walnut claim, formerly the Blue Bird No. 4, was unlawfully "jumped" by its present alleged owner, and they have expressed the intention of bringing suit to recover in the event of continued development of the property. This title situation would need to be clarified in the event the project is deemed eligible to receive loan.

- (4) There are no impeded right of way facilities.
- (5) There would be no likelihood of surface or sub-surface trespass during the project.

B. Existing Development

- (1) The property is opened by trenches and pits and several shallow shafts and by a tunnel.

(a) Maps, etc.

The sketch map accompanying this report is based upon surveys and a preliminary map by Mr. Cummings, the engineer who conducted the Bureau of Mines Project.

(b) Sampling, assays, etc.

The sampling by the Bureau of Mines (so far as assays were available at the time of writing this report) are shown on the accompanying map; also the samples taken by this engineer.

(c) Condition of workings, etc.

The various cuts, trenches and the tunnel were readily accessible. The 20' shaft and the 15' shaft were filled with water.

(d) General features of Deposit.

The property is located in a region of rugged topography on the southwest edge of the Sierra Ancha mountains. The country rock is a coarse to fine grained pink granite which, in the subject property, is cut by an east-west trending fault zone varying from 5 to 40 feet in width. The fault stands almost vertical with a very slight dip toward the north. The fault zone material is altered soft country rock containing stringers and thin lenses of fluorspar associated with quartz. The hanging or north wall of the fault zone is well defined in the various openings on the property, and by surface expression. The foot wall of the zone is generally not clearly defined in a gradational lessening of the altered material from the hanging wall to the firm country rock of the foot wall.

The fault zone is exposed in various openings beginning at about the center of the Walnut claim and trending westerly in the bed and on the banks of a creek (normally dry) for a distance of about 1000 feet. It there is recognizable by croppings and in workings up and over the crest of a small steep hill on the Blue Bird No. 2 claim. West from this claim the fault can be seen trending through the Blue Bird No. 3 claim with, however, less width of alteration zone and little or no showing of fluorspar. On the east in about the center of the Walnut claim it is cut off by a schist mass some 50 feet thick with schistosity striking approximately northeast and with indeterminate dip, and it has not been located beyond this point. The fault is not exposed because of very deep overburden in the creek bottom at the east base of the hill on the Blue Bird No. 2 claim, nor for a hundred or so feet either side of the creek crossing.

The Bureau of Mines development consisted of a series of trenches at more or less regular intervals across the zone, and in places along the strike of the zone, and the sinking of a number of pits and a 20 ft. shaft, and the driving of a 172 ft tunnel into the hill on the Blue Bird No. 2 claim; also a 15 ft. shaft was cleaned out to bottom. This shaft was filled with muck at the time of the first examination and Samples Nos. 1 and 2 were taken near its collar. The shaft was reported to be 25 feet deep at that time. The stripping of heavy over burden (up to 20 ft deep)

was done with a bulldozer. Some of the trenching across and along the strike of the fault zone was done with the bulldozer, but generally when the overburden was stripped off a pit was sunk 6 to 10 feet deep in the most interesting showing and short coyote holes were put out several feet toward each wall in the bottom of the pit.

The development openings are shown on the map which accompanies this report as well as the location and results of the sampling.

The samplings disclose two areas which deserve consideration as sources of ore. One of these is in the creek bottom on the Walnut claim and is designated "East Ore Body" on the map and the other, designated "West Ore Body" is in the hill on the Blue Bird No. 2 claim. The two ore shoots are described below, with estimates of values and probable tonnage of ore available.

East Ore Body:

The most easterly ore showing of importance is in a pit approximately 80 feet east from the discovery location on the Walnut claim. The weighted average of the two samples here is 76.52% CaF_2 - 18.0% SiO_2 across 1.8 feet. The weighted average of the sampling in the 15 ft shaft is 70.21% CaF_2 - 23.99% SiO_2 across 5.25 feet; and in the 20 ft shaft 50.79% CaF_2 - 21.82% SiO_2 , across 5.25 feet. A sample across 6.9 feet in a pit between the discovery location and the 20 ft shaft assayed 39.42% CaF_2 - 42.39% SiO_2 . Forty feet west from the 20 ft. shaft a cut shows a 5.5 ft width which assays 37.77% CaF_2 - 45.61% SiO_2 .

The above sampling indicates an ore shoot approximately 160 feet in length having an average width of 4.95 feet and assay of 50.72% CaF_2 - 33.20% SiO_2 . Immediately west from this sample the openings across the fault zone are barren of fluorspar or show only occasional thin stringers.

The fluorspar and quartz in the above body occur in fine to coarse granular form and are intimately mixed and there would be no possibility of selectively mining or sorting to a higher grade of fluorspar. Both of the walls enclosing the fluorspar-quartz mineralization are altered and soft and quite flakey, and dilution therefore would be high, and the material could not be mined cheaply. A dilution factor of 20% would seem indicated and if this were applied to the above average grade it will be seen that the product would run around 40% CaF_2 . Using a cubic foot per ton factor of 11.5, the ore body would supply approximately 69 tons per foot of depth mined. The greatest depth opened at present is 20 feet, and the probable depth to which the ore shoot will extend can only be a matter of conjecture. It is worth noting, however, that most fluorspar deposits are shallow, and in many districts for purposes of estimation a depth of $2/3$ to one times the surface length of the ore shoot is considered acceptable. If the shoot here is assumed to extend to a depth of 100 feet, the probable tonnage would be

approximately 6,900 tons. A somewhat higher grade of ore would be available in much reduced tonnage in the vicinity of the 15 ft. shaft.

West Ore Body

The croppings in the small hill on the Blue Bird No. 2 claim indicated the presence of an ore shoot or shoots here, and a tunnel was driven into the hill in the fault zone. At the time of the examination the tunnel had been advanced 131 feet from its portal. The face of the tunnel contained a good showing of fluorspar, and fluorspar mineralization, of irregular width but continuous, was present throughout the full length of the tunnel. Mr. Cummings has informed us further that at 134 feet, the tunnel encountered a post-mineral fault and after traversing 31 feet of gouge and fault breccia, the vein was less broken from this point (165 feet) to the face at 172 feet, where work was discontinued.

This engineer's samples in the tunnel, together with two samples by the Bureau of Mines at the portal, gives an average assay of 79% CaF_2 - 16.89% SiO_2 , across 2.69 feet for a length of 131 feet.

The average of the several samples of the croppings directly above the tunnel (Sample No. 4873 and east) averages 73.32% CaF_2 - 17.33% SiO_2 , across 3.1 feet.

The average of the tunnel assays and cropping assays is 75.96% CaF_2 - 17.12% SiO_2 , across 2.9 feet.

The hanging or north wall of the west ore shoot is firm and the footwall is fairly firm. The walls are not smooth, however, and often a band of gouge material is present, also the vein weaves on strike; and a certain amount of dilution therefore is inevitable, probably at least 10%. Application of this factor to the above average will reduce it to about 68% CaF_2 . If the ore shoot is assumed to extend to a depth of 100 feet below the tunnel level (approximately 150 feet average below the surface) the probable reserve of ore would appear to be approximately 5,000 tons.

While occasional samples show a shipping grade of fluorspar, the amount available would be small and, except in a few places, it would not be economically practical to selectively mine the ore body so as to make such a product. In the remainder of the shoot the ore is intimately mixed with a considerable amount of quartz, which could not be sorted out, nor could any large amount of wall rock be sorted out because of its tendency to shatter and mix with the vein material. Practically all of the mine product therefore would need to be milled.

Cropping samples showing good fluorspar content to a point about 400 feet westerly from the portal of the tunnel suggest the possible presence of another narrow ore shoot or shoots westerly from the one described above (somewhat lower grade, however).

Estimated Values and Costs.

The applicant originally proposed to hand sort the ore and anticipated making a shipping product assaying about 85.6% CaF_2 - 9.18 SiO_2 . This ore would contain 66.58 effective units (i. e. fluorspar content less two times the silica content). Recent quotations by the Continental Ore Company for a gravel product such as this are as follows (F.O.B. shipping point):

<u>Effective CaF_2 Content</u>	<u>Price</u>
60-65%	\$18.50
65-70%	19.00
Over 70%	20.00

The applicant presents a letter from the Continental Ore Company offering prices as follows (F.O.B. shipping point) for material containing 80% CaF_2 (min.) - 8% SiO_2 (max.) or 85% CaF_2 (min.) - 10% SiO_2 (max.)

Lumps up to two fists in size	\$20.00 per ton
Ground up to 1" in size	22.00 " "

In view of the high silica content of the ore in this property and its granular intermixture with the fluorspar (which precludes sorting) it would be possible to attain the above shipping grade in only small selected portions of the West Ore Body, and in no part of the East Ore Body.

The applicant suggested as an alternate plan (with flotation as an eventual recovery process) to crush and jig the ore, and he anticipated thus making a ceramic grade product worth \$30.54 per ton (with premium) F.O.B. shipping point, with a 70% recovery of the fluorspar in the jig feed. However, in the amendment (dated May 15, 1945, to the application, he points to the quotation by the Continental Ore Company of \$22 per ton for 85% CaF_2 min. - 10% SiO_2 max. and he counts upon making such a product. Since ceramic and chemical grades can generally only be produced by flotation, only this more practical plan proposed in the amendment is considered in the following calculations and estimates:

The applicant expects a recovery, by jiggling, of 70% (based on tests), which seems high for the type of material and method of treatment. If this figure, however, is used the ratio of concentration would be, for the East Ore Body,

$$\frac{85 - 12}{40 - 12} = 2.61$$

and for the West Ore Body -

$$\frac{85 - 20.4}{68 - 20.4} = 1.36$$

Trucking concentrates the 65 miles to the shipping point would cost (for the mountainous road) in the neighborhood of 10¢ per ton mile, or \$6.50 per ton of concentrates. This cost might be materially reduced if shipments were maintained at a high rate. The value of the jig product therefore, would be \$22.50 - \$6.50 = \$15.50, and the value of the mine products at the above ratio would be \$5.94 per ton for the East Ore Body and \$11.40 for the West Ore Body.

Mining costs in the East Ore Body would be high because of the soft flaking nature of the walls, and in the West Ore Body because of the narrow and irregular width of vein, and development cost for such small ore bodies would be high per ton developed. Also, the distance from the centers of supply and labor would contribute to high costs. There is no operating performance at the property nor in the district upon which to base cost estimates. However, judging from results obtained elsewhere, under similar operating conditions, costs are estimated as follows:

Mining	\$5.00
Development	2.00
Milling	<u>2.50</u>
	\$9.50

It will be seen from the above that mining of the East Ore Body would not be an economical operation. On the other hand, an operating profit of \$1.90 is indicated for the West Ore Body; or, after deducting royalty (90¢ per ton for concentrates of metallurgical grade equals $90 \div 1.36$, or 66¢ per ton of ore), \$1.24 per ton.

Proposed Work:

The applicant proposes to sink 70 feet and drift 200 feet on the Walnut claim, and to drift 390 feet and raise 100 feet on the Blue Bird No. 2 claim; and also proposes to crosscut 30 feet near the portal of the tunnel on this claim to explore a stringer from the main vein at this point. The above includes the cost of mining equipment and cost of the work at rates per foot which appear reasonable. The total estimated cost (\$20,000) does not include milling equipment. The applicant anticipates that crude ore shipments will make the project self-sustaining after or during the expenditures of the loan funds.

Comments of Supervising Engineer.

The recent extensive surface and exploratory project of the Bureau of Mines has disclosed the presence of two small lenses of fluor spar separated by approximately 1000 feet of barren or nearly barren material in a broad fault zone traversing the property.

Because of a generally quite high silica content intimately mixed with the fluorspar, it would not be possible to ship any important amount of metallurgical grade product and the ore therefore would have to be concentrated to produce a marketable grade; and because of high transportation costs it could not be treated economically at the nearest custom mills in New Mexico, but would have to be milled on the property.

Sampling of the east lens indicated that it could not be profitable handled except perhaps in a very small portion.

Sampling of the west lens indicates that a modest profit, somewhat over a dollar a ton, could be realized from mining and milling operations on the property; and perhaps a small amount of select material might be shipped without milling. The lens is thin and short in length and the probable tonnage in it appears to be quite small. A third lens of about the same size as the west lens seems indicated by surface sampling immediately west of the west lens. Surface work beyond there and east of the east lens disproves further ore possibilities in each direction.

There is no equipment, tools or housing on the property. A rather heavy expenditure would be required for these items and for mill installation and for initial development; and the limited probable tonnage available with narrow indicated margin of profit does not justify the belief that the expenditure could be amortized in more than small part during the life of the project.

It is recommended, therefore, that this application for loan be declined.

T. P. LANE
Supervising Engineer

Attachments:

Map
Assay Certificate
3 Photos

Arr mail
TULLY *

RE: ROSCOE

Receipt is acknowledged of your letter dated June 28 relative to the captioned loan application.

Your letter is accompanied by a statement of actual production costs at a fluorspar loan project in New Mexico and you point out that this cost is considerably higher than the applicant's estimated mining cost. In this connection I would point out that I did not accept the applicant's cost estimate but instead I estimated, on page 8 of my report, that the mining and development cost would be \$7.00, before royalty. The cost estimate is arrived at in a rather arbitrary manner since there was no operating performance here or in the district upon which to base a cost estimate. It is interesting to note that my estimated cost is slightly higher than those shown upon the cost statement referred to above (^{where} ~~where~~ royalties and trucking is deducted from the total shown in that statement).

In my report I called attention to the fact that the amount of material which could be shipped as a metallurgical grade of spar appeared to be small and that therefore the bulk of the ore would need to be milled. I pointed out further that shipping to custom plants in New Mexico would not be an economical procedure and that the ore therefore would have to be milled at or near the property. As for the results which might be anticipated from jigging the ore, I believe that these would be satisfactory and comparable to those obtained at numerous similar plants working on similar ores in other districts. In describing the ore I stated that the quartz and fluorspar were intimately mixed. It should be noted however that while the mixture of these two minerals is so intimate as to preclude sorting the individual grains and pieces in the friable mass are distinctly one or the other of the minerals and the possibility of ^{their} ~~this~~ separation by jigging so as to make a metallurgical grade of spar would appear to be reasonably indicated. The results of the test which the applicant had made on the ore is further indication that the ore is amenable to jigging.

You point out that the financing of a jig plant has not been given consideration. At the time the applicant made his original proposal he

was of the opinion that sufficient profit could be realized from crude shipments of selected ore to pay for a jig installation. However, at the time of submitting his last amendment to the application he had in mind that the loan funds would be expended toward proving ^{in amount} up a reserve of ore which he hoped would be sufficient to justify an additional loan for a jig plant and for working capital. The required plant would be a simple affair consisting of ^{a crusher,} bins, feeders, screens and several jigs. ^{Crushing} ~~of only a small portion of the field would be necessary and no~~ No crushing nor grinding is contemplated. The cost of the plant plus adequate working capital would probably require an additional loan of \$15,000.00 to \$20,000.00 thus making a total loan of around \$30,000.00.

~~The shoot of ore proven in the tunnel is narrow and short in length, and while the grade is good the production cost would be high and the indicated profit therefore would be quite modest. The croppings on the hill suggest the presence of another shoot or shoots of ore immediately west of here, and a possible length of ore, altogether, of several hundred feet of ore. It is obvious then that this narrow vein would have to extend, with present spar content, to a depth of several feet in order to provide sufficient tonnage to the total essential loan (about \$30,000.00). Since there is no deep development on the property and no other fluorospar development~~

The shoot of ore proven in the tunnel is narrow and short in length, and while the grade is good the production cost would be high and the indicated profit would therefore be quite modest. The croppings on the hill suggest the presence of another shoot or shoots of ore west of here, and a possible length, altogether, of several hundred feet of ore. Obviously then this narrow vein would have to extend, with about its present spar content, to a depth of several hundred feet in order to provide sufficient tonnage to amortize the total ^{essential} ~~essential~~ loan (about \$30,000.00).

Since there is no deep development on the property and no other fluorospar development in the district the matter of the depth to which ore will extend is purely conjectural. In view of the speculative nature of ~~these factors the continuity of value and depth of ore~~ the development required to determine ^{the continuity of value and depth of ore} this factor I am not inclined to urge that the loan (\$12,000.00) be granted. In my own mind the project

Fluorosp. deposits in general are shallow and erratic.

is pretty much "borderline" and I could readily understand a conclusion contrary to that expressed in my letter of June 16. Perhaps the decision here ought to hinge upon the degree of urgency of need for fluor-spar in the war effort, and your office would be better able than I to judge the situation in this respect.

A handwritten signature in dark ink, appearing to read "J. I. Lane". The signature is written in a cursive style with a large, looped initial "J" and a distinct "I" and "L".

~~Tully~~

~~Referring to your letter dated June 28 relative to the captioned docket~~

Re Roscoe

Tully

~~with~~

①

Receipt is acknowledged from letter dated June 28 relative to the captioned docket, loan application.

The project is admittedly a borderline case. The vein is narrow and irregular and the

~~Receipt is acknowledged from letter dated with attached~~

~~As you state that~~

your letter is accompanied by a statement of actual production costs at a fluorapatite mine project in New Mexico and you point out that this applicant's estimated cost is considerably higher than the applicant's estimated mine cost. In this connection I would point out that I did not accept the applicant's cost estimate but instead I estimated, that is on page 8 of my report, that the mine and development cost would be \$7⁰⁰ before royalty. This cost estimate was arrived at in a rather arbitrary manner since there was no operating performance ^{here}

in the district upon which to base the a cost estimate. ~~but~~ It is interesting to note that ~~the~~ ^{my} ~~estimated~~ cost is slightly higher than those shown upon the cost statement referred to above (where royalties and trucking is deducted from the total shown in that statement)

I pointed out in my report that ^{the grade} it would not be possible to ship any ~~unprofitable~~ amount of metallurgical spar and that the lower grade material could not be profitable.

In my report I called attention to the fact ~~I pointed out in my report~~ that the ~~grade and amount of material~~ which could be shipped as ^a metallurgical grade of ~~fluospar~~ spar appeared to be small and that ~~therefore~~ the ^{bulk of the ore} ~~product~~ would need to be milled. I pointed ^{out} further that shipping to custom plants in New Mexico would not be an economical procedure and that ~~therefore~~ the ore ~~therefore~~ would have to be milled ~~at the~~ or near the property. As for the results which might be ~~obtained~~ anticipated from ~~fluo~~ the ore, I believe that this would be ^{satisfactory and} comparable to those obtained at numerous ^{similar plants} ~~similar~~ ^{in other districts} ~~properties~~ ^{ore}. In describing the ore I stated that the quartz and fluospar were intimately mixed. ~~Perhaps I should have said that it is an intimate mixture of quartz~~

~~and flint~~

~~By the way~~

Mr. P

It should be noted however that ~~the grains~~ while the mixture of these two minerals is ^{so} intimate as to preclude sorting the individual grains and pieces in the friable mass are distinctly one or ^{the} other of the minerals and ^{the possibility of} thus separation by jigging so as to make a marketable metallurgical grade ~~product~~ ^{of ore would appear to be} ~~can be~~ reasonably ^{indicated} ~~indicated~~ ^{results of the} indicated. The ~~applicant's~~ test on the ore which the applicant had made on the ore ~~support~~ ^{is} ~~supp~~ ^{to this belief} indicated that the jigging of the ore is ~~feasible~~ ^{amenable} to jigging.

You point out that the financing of a jig plant ~~was~~ ^{has} not ^{been} given consideration ~~which~~ is true. ^{At} ~~the~~ ^{time} the applicant ^{made his} original proposal he was of the opinion that sufficient profit could be ~~made~~ ^{realized} from crude shipment of selected ore to pay for a jig ^{house} ~~installation~~ ^{at the time of submission} ~~his~~ last amendment ~~to~~ ^{to} the application he had in mind that the ~~proposed~~ ^{fund} loan ~~would~~ be expended toward ~~putting up~~ ^{or} ~~sufficient~~ reserves of ore which he hoped would be sufficient to justify ~~any~~ ^{for} additional loan for ~~the~~ ^a ~~purpose of~~ ^{purpose of} a jig plant and for working capital. The ^{required} plant would be a simple affair consisting of ~~bins~~ ^{bins}, feeders, ~~at~~ screens and ~~several~~ ^{several} jigs. No crush-

More grinding is contemplated. The ^{cost of the plant} ~~plant~~ ~~and~~ plus adequate working capital would probably require an additional loan of \$15,000 to 20,000 thus making a total loan of around \$30,000.

In summary, I would say that

The known shoot of ore here ^{is} of good grade is narrow and short, the ~~draw~~ and therefore would not make one ~~any~~ feet in deep development. ~~On the hill~~ ^{on the} ~~hill~~ The cappings on the hill suggest that another short or shoots may exist here with a possible length of several hundred feet of ore. The depth ^{to} ~~distance~~ the ore would extend is purely conjectured and judged by the

^{from} ~~exposed in the tunnel~~ The known shoot of ore ^{is} narrow and short in length. The cappings on the hill ^{therefore} suggest that another short or shoots of ore ^{might exist} and that run in west of here, ^{and} with a possible length of ore, although, of several hundred feet. ^{It} is obvious then that this narrow vein would be ^{to} ~~extend~~ ^{with} ~~enough~~ ^{content}, to a depth of several feet in order to provide sufficient tonnage to amortize the total ^{cost} ~~loan~~ (about \$30,000). Since there is no deep development on the property and no other ^{development} ~~development~~

and while the grade is good the cost of ~~mining~~ ~~and~~ ~~all~~ ~~production~~ ~~cost~~ ~~would~~ ~~be~~ ~~high~~ ~~and~~ ~~the~~ ~~profit~~ ~~from~~ ~~it~~ ~~would~~ ~~be~~ ~~quite~~ ~~small~~.

The shoot of ore given in the tunnel is narrow and short in length, and while the grade is good the ^{production} ~~mining~~ cost would be high and the indicated profit would ^{therefore} be quite modest. The croppings on the hill suggest the presence of another ~~short~~ shoot or shoots of ore not of here, and a possible length, ~~of ore~~ altogether, of several hundred feet of ore. ~~Obviously~~ then this narrow vein would have to extend, ^{about its} ~~present~~ ^{present} content, to a depth of several hundred feet in order to provide sufficient tonnage to amortize the total estimated loan (about \$3,000).

to which Since there is no deep development on the property and no other fluorospar development in the district the matter of ^{the} depth of ore ~~will~~ extend is purely conjecture. In view of the speculative nature of the development required to determine this factor I am not inclined to urge that the loan (\$12,000) be granted. In my own mind the project is pretty much "borderline" and I could readily understand a conclusion contrary to that expressed in my letter of June 16. Perhaps the decision here ought to hinge upon the degree of urgency of need for fluorospar in the war effort, and your office would be better able than I to judge the situation in this respect.

~~Original Supplemental Report~~

Re Daniel L. Rose
Docket No ND 5986

Tully

Col. Rose the applicant in the
captained docket was in the office day
before yesterday and submitted an ~~amendment~~
^(the second) ~~to~~ his application for a
loan ~~(about amount same)~~. His letter
amending the amount of loan requested
from \$20,000 to \$12,000, and ~~outlining~~ ^{development} a new program
~~and less cost, development program~~
~~than that previously planned~~ is enclosed
herein with together with his sketch
of the proposed work. He submitted
this plan following a recent visit to the
property with a mining engineer. The
new plan is to ~~construct~~ ^{only} the west ore shoot and
development ^{extending} and ~~abandon~~ defer work upon the east
shoot until some later date. ~~Also he~~
~~proposes to crosscut southward into the~~
hill on the west end of the ^{proposed} The manner of
developing of this west shoot has been
changed, and it is now
proposed to crosscut southward into the
hill on the west end of the ore showing
and drive east in the vein at approximately
100 feet lower elevation than the
present tunnel level. The cost for
this work is estimated at \$12,000, and is
itemized in the ~~letter~~ ^{the} applicant's letter
amending letter.

My ~~recent~~ report, dated June 6, following an examination of the property with respect to the original application and first amendment thereto, pointed out that a modest profit ^{would appear to be} ~~was~~ indicated ~~from~~ ^{mining of} the ~~rest~~ ^{however} ore shoot. My report carried an unfavorable recommendation regarding the overall program then under consideration. The decision was ~~reached~~ ^{reached} ~~at~~ after considerable deliberation since the ^{western portion of the} ~~property~~ ^{has} ~~without~~ merit; and it was based upon the uneconomic aspect of the east shoot and upon the assumption that the ^{rest} ~~deposit~~ ^{probably} would be shallow. There was no factual evidence ~~present~~ ^{which to base} this assumption and it was made upon the ^{generally recognized fact} ~~assumption~~ that ~~that fluorapatite does~~ ^{most} fluorapatite deposits are ~~generally shallow~~ ^{do not extend to} shallow. Obviously a more generous assumption of extension in depth than that given in my report would greatly increase the probable tonnage available in the west ore shoot and in the indicated (on the surface) shoot immediately west of it. If the ^{31 feet of} ~~broken~~ ^{ground} in the end of the tunnel is assumed to be a lean part of a long shoot (surface sampling ^{suggests} ~~indicates~~ a possible length of 350 to 400 ft.) ~~an extension in~~ ^a depth of ~~one~~ of several hundred feet of ore would not be an unreasonable expectation.

In view of the above and the applicant's recently submitted more reasonable and less costly development proposal I ~~would not~~ recommend granting the ~~loan~~ requested (\$12,000)

Mr. P. P. Lane
 At this same connection
 My estimate of cost of operation was based
 upon a very modest rate of
 production, and this cost ^{would} be covered
 in the event that the proposed development
 made available a substantial amount of ore suitable
 for a larger scale of operation.

Upon reconsidering the matter in the
 light of the view of the above and in
 view of the applicant's recently submitted
 more reasonable and less costly develop-
 ment proposal I ~~now~~ would recommend
 the granting the ^{requested} loan ~~requested~~ (\$12,000)

J. P. Lane

Attachment

Applicant's letter amending

loan application, with attached sketch