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having been reached by the applicant to date although some quartz stringers containing scheelite have been exposed by this work. Earlier development on this level paralleled the quartz veins and the applicants development was in the nature of a X - cut.

The early development of the 265 foot level, however, was directed slightly north of west from the shaft and it X - cut the general strike of these quartz veins. The map notation indicating a quartz vein on the 265 is several hundred feet along the strike north of the applicants 40 foot shaft and 165 foot level X - cut.

(D) Exposures and indicated locations can be summarized as follows: 1- Wide-spread surface cuts indicating scheelite on several quartz veins. 2- A 40 foot shaft exposing 9 feet of ore at bottom. 3- A narrow stringer or stringers on the 165 foot level near the vertical extension of the above shaft but not on the same vein. 4- A wide quartz vein on the 265 foot level north of the above; value of this unknown for reasons set forth in (B).

(E) A study of the docket certainly indicates a showing worthy of development. Some doubt is raised as to eligibility for a "C" loan, however, as the objective (D - 4 above) is not, and cannot be in the circumstances, well described. This loan is being recommended for the reason that exposure of commercial WO₃ ore on the 265 foot level is entirely feasible and that, with such exposure, a substantial tonnage can be developed by drifting south on the 265 foot level, X - cutting west on the 165 foot level, and raising and drifting on the 165 foot level. This routine would ordinarily be poor policy in that greater lateral work should be performed with downward progression of development but in as much as the 265 foot level already exists, and can fairly easily be made accessible, advantage of it may well be taken.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

Earl F. Hastings
Assistant Director and
Projects Engineer

RECONSTRUCTION FINANCE CORPORATION

MINING DIVISION

REPORT OF SUPERVISING ENGINEER

Docket No. C-ND-8024 - C. M. Taylor & A.L.Gorman
Date authorization for examination
received - - - - - May 1, 1943
Date of Examination - - - - - May 8, 1943
Date of Report - - - - - May 18, 1943

NOTE: The applicant has been operating under a Preliminary Development Loan in the amount of \$5,000.00 which was granted to the project in February, 1943. The loan fund has been largely expended and the borrower is requesting an additional loan for the purpose of further developing the project.

1. NAME AND ADDRESS OF APPLICANT

C. M. TAYLOR & A. L. GORMAN
Pima County Court House
Tucson, Arizona

Correspondents: Same

2. CHARACTER OF PROJECT

Development of Tungsten deposit.

3. LOCATION OF MINE

The mine is located in Sections 1, 2, 11 and 12, T. 18S., R. 12 E., in the Pima Mining District in Pima County, Arizona. It is thirty (30) miles south by road from Tucson and nine (9) miles west by road, from Sahuarita, the nearest rail point. These roads are good, hard-surfaced dirt roads with no steep grades and are passable at all seasons.

4. APPLICANT

The applicant is a partnership, composed of C. M. Taylor and A. L. Gorman. They are both elderly men. Mr. Taylor is the County Assessor for Pima County, Arizona, a position which he has held for many years and has been connected with mining intermittently during most of his adult life, generally, however, in small scale exploration and developments. Mr. Gorman is a practical mining man of many years experience. The work on this project to date, has been done chiefly on contract by Mr. E. P. Hilton who has furnished practically all of the equipment now on the property and it is proposed to continue work under this arrangement. Mr. Eldred Wilson, Geologist for the Arizona Bureau of Mines, has made a close study of the area and of the subject property. He is personally known to the applicant and has agreed to keep in touch with the proposed work and assist as far as possible with his geological interpretations.

5. LOAN REQUESTED

The applicant originally contemplated requesting an additional loan in the sum of \$5,000.00 for the purpose of developing the 265' Level in the mine. Following inspection of the accessible portion of the 265' Level, (hereinafter described) and discussion with this Engineer, it was agreed that development on the 165' Level was more practically and logically indicated and accordingly, the borrower has applied for an additional loan in the sum of \$3,000.00 for the latter purpose.

6. DESCRIPTION OF PROJECT

A. General Features

- (1) There are no workings, mill, etc., which are not confined within the applicants' ownership.
- (2) The project complies with State Compensation and Safety-first Statutes.
- (3) There are no apparent discrepancies in the 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. The mine is opened by a Shaft.

- (1) The property has been made the subject of a recent study by Mr. Eldred Wilson, Geologist for the Arizona Bureau of Mines. A copy of his map showing the geology and surface workings on the property accompanies the application. The sketch which accompanies this Report was made from the above map and from a compass and tape survey of the accessible portions of the two levels in the shaft.
- (2) The property was not sampled. Tungsten bearing material is exposed in many openings on the surface and the mill runs have been made upon material gathered up from the various cuts, shafts, etc. Because of the irregularity of mineralization, common to most tungsten deposits, it is believed by this Engineer that the result obtained by milling material from the most attractive surface showing indicates the potentiality of the property more reliably than would a large number of scattered channel samples.
- (3) The 165' level is accessible and in good condition. The 265' level station in the shaft is in poor shape and the level is partially caved to a point 60' from the shaft. At this point, the level is completely caved and inaccessible.

(4) General Features of deposit, etc.

The property, known as the "Morgan Mine" lies in a region of a group of mines in the Twin Buttes area and is credited with a past production of copper and some silver, valued in excess of \$2,000,000.00. This production was made many years ago and the workings, except the upper portion of the old vertical shaft, are all caved. The ore occurred along a steep east-west trending contact between a mass of brown and green garnet and an area of mixed shale, sandstone and conglomerate.

The present interest in the property is centered about a series of tungsten bearing veins which strike in a NE-SW direction with dips ranging from 45 to 70° northwesterly. These veins are quartz filled fissures in the shale-sandstone conglomerate and vary in width from a few inches to a maximum of about 9' with widths of 2 to 4' quite common. Several strong faults have been identified on the surface and it seems quite probable that several of the larger of these veins are actually faulted segments of the main vein. If this is true, it would be logical to expect that many of the other parallel veins exposed on the surface will fall into a similar pattern governed by the main faults.

Previous to the granting of a Preliminary Development Loan, a considerable amount of work had been done upon the surface, particularly in a shaft which was sunk to a depth of 40' feet. The recommendation for a loan was based upon samplings which showed WO_3 content of .55% to .83% WO_3 in the shaft across a vein width of 5 to 9' and upon the results from milling approximately 140 tons of ore in a custom mill at Tucson, which showed a head assay of .67% WO_3 . Some crosscutting in a westerly direction was done on the 165' level. This work encountered several stringers and small masses of quartz containing some scheelite, but no quartz body of consequence. A projection of the indicated dip of the vein in the shaft shows that the face of the crosscut is some 40' short of an intersection with the vein. Continuation of this crosscut would have been a logical development, but the opening of the 265' level seemed more desirable at that time because of the position, indicated on an old map, of a large quartz vein crossing the west drift on this level at 90' from the shaft. The water in the shaft stood at 30' above the level and it was believed that the shaft and level would be readily accessible upon unwatering. Actually the shaft station was found to be caved, the shaft timbers were out between the 165' level and the 265' level, except in the manway compartment, and the west drift was partially caved for a distance of 60' from the shaft and completely caved at that point. Continued work on this level would be a job of considerable magnitude involving shaft and station timbering, and cleaning up and timbering with probably considerable spiling in the drift. Also, the level would have to be kept pumped clear of water. In view of the above, it was judged wiser to abandon the proposed work on this level and instead, develop on the 165' level. Additional

considerations beside the probable excessive cost of the work on the lower level were the facts that development on the upper level would be near the surface ore, and that the work on the 265' level would be along the contact, whereas all the surface ore showings and the face of the 165' level crosscut are at some distance southwest of the contact.

The borrowers' statement as of May 10 shows a balance in the trust fund of \$1,111.61. The money has been spent judiciously. It is notable that by contracting the work, it has not been necessary for the applicants to lay out any capital on equipment for either the shaft rehabilitation or the unwatering. In the latter case, a firm in Tucson furnished the pumping equipment and the expert help needed in rigging up the machinery and pump shafting and pipe.

C. Proposed Development

The applicant proposes to do 200 or more feet of development on the 165' level, consisting of crosscutting to the vein or veins, and drifting and raising as indicated during the progress of the work.

It is proposed to do the work on a contract basis at \$15.00 per foot, the contractor furnishing the equipment.

The project is near the settlement of Twin Buttes and no camp accommodations will be required.

No expenditure beyond the contract price of the development is contemplated.

The outlook for ore is based upon the number of tungsten bearing veins which have been developed or indicated upon the surface and more particularly upon the record obtained from the milling of three lots of ore from the property. Fairly complete data is available regarding the first two lots, shipped to a custom mill, totalling 139.54 tons. The applicant includes a settlement statement regarding these shipments which shows a mill head average of .675% WO_3 . The last mill lot totalled 277 tons and recovered 1,650 lbs. of concentrate, or approximately 6 lbs. per ton. A complete mill report is not available as in the case of the first two lots, but by assuming a concentrate grade of 60% WO_3 and a recovery of 50%, it will be seen that approximately .18% WO_3 per ton was recovered and mill heads ran approximately .36% WO_3 .

The low recovery is explained by the fact that the mill is not designed for treating this type of ore. There is no provision for recovering the larger crystals by screens when freed and thus avoiding excessive sliming of the scheelite. Also, since much of the scheelite is very fine, the material should be finely ground and the product floated after tabling. It would probably be necessary to treat the float concentrate on slime tables to raise its grade.

The last mill lot was derived from the balance of the dump material not included in the first two shipments and from some open cut work on a vein near the shaft. Further development in the shaft would have required equipment and

it seemed more advisable to open the old vertical shaft and develop from it as described above. The shallow shaft was not accessible at the time of this examination, but the vein could be seen to be wide in the bottom. The statement is made by reliable persons that the values are continuing in the bottom and this statement is supported by the mill runs which include considerable material from the shaft. Judging from the results of mill runs and from assays by various persons, the more favorable portions of the veins at the surface seem capable of producing a grade of ore ranging between .38% WO_3 and .78% WO_3 , or around .50% WO_3 .

7. COMMENTS OF SUPERVISING ENGINEER

Development of the property to date has disclosed a close grouping of scheelite bearing veins on the surface and mill runs amounting to several hundred tons have demonstrated the presence in the veins of shoots of material containing commercial amounts of WO_3 .

Further development of the veins at depth in the manner proposed by the applicants appear to be a logical and justifiable procedure and an additional loan to the project is therefore recommended.

T. P. LANE
Supervising Engineer

Sup. Engineers Report

x Docket No.

C-ND-8024

Date Auth for Exam. Rec'd.

May 1, 1943

Date of Examination

May 8, 1943

Date of Report

Note: The applicant has been operating under a Preliminary Development loan in the amount of \$5000 which was granted to the project in Feb 1943. The loan fund has been ^{largely} expended and the borrower is requesting an additional loan for the purpose of further developing the project.

1 Name and Address of Applicant

Name: C. M. Taylor & A. L. Gorman

Address: Pima County Court House
Tucson, Arizona

Correspondent: Same

2 Character of Project

Development of Truston deposit.

3 Location of mine

The mine is located in secs. 1, 2, 11 and 12, T 18 S., R 12 E., in the Pima Mining District in Pima County, Arizona. It is 30 miles south of

Mr. Eldred Wilson, geologist for the Virginia Bureau of Mines has made a close study of this area and ~~the~~ it is personally known to the applicant and ~~an~~ agreed to ~~assist~~ keep in touch with the proposed work and assist as far as possible with his geological interpretation.

road from Tucson and 9 miles west by road from Sahuarita, the nearest rail point. These roads are good hard surfaced dirt roads with no steep grades, and are passable at all seasons.

Applicant

The applicant is a partnership composed of C. M. Taylor and A. L. Gorman. They are both elderly men. Mr. Taylor is the County Assessor for Pima County, Arizona, a position which he has held for many years. He has been connected with mining intermittently during most of his adult life, generally however, ^{or else} ~~the~~ ~~22~~ ~~22~~ ~~1/2~~ Mr. Gorman is a practical mining man of many years experience. The work to date has been done chiefly on contract by a Mr. E. P. Wilton who has furnished the practical all of the equipment now on the property, ^{and} it is proposed to continue work under this arrangement.

Loan Requested

The applicant originally contemplated ~~making~~ requesting an additional loan in the sum of \$5000 ~~and~~ for the purpose of developing the 265 Ft. level in the mine. Following inspection of the ^{265 Ft} ~~particular~~ of the level (hereinafter described) and discussion with this engineer it was agreed

that development ^{on} of the 165 Ft level ~~was~~ ^{practically and} ~~was~~ ^{more} logically indicated, and accordingly the borrower has applied for an additional loan in the sum of \$3000 ^{for the latter} purpose.

6

Description of Project

A. General Features

1. There are no workings, mill etc which are not confined within the applicant's ownership
2. The project complies with state compensation and safety-first statutes.
3. There are no apparent discrepancies in the 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.

The mine is opened by shaft
 a. The property has been made the subject of a recent study by Mr. Eldred Wilson, geologist for the Arizona Bureau of Mines. A copy of his ~~geological~~ map of the showing the ~~geology~~ ^{surface} and surface ~~workings~~ in the property, accompanies the application.

The sketch which accompanies this report was made from the above map and from a compass and tape survey of the accessible portions of the two levels in the shaft. The property was not sampled. Tungsten bearing material as exposed in ~~the~~ ^{the} ~~great~~ many openings on the surface and that mill runs have been made upon the gathered up ^{material} ~~sample~~ ^{from the various} cuts, shifts etc.

~~many places on the property~~. Because of the extreme irregularity of mineralization, common to most tungsten deposits, it is believed by this engineer that the result obtained by mulling ^{material from} the most attractive surface showings is ~~an unreliable~~ ^{of the property} ~~indication of the potentialities that~~ ^{would be the results obtained} ~~scattered channel cuts~~

indicates the potentiality of the property more reliably than would a large number of scattered channel samples.

c. The 165 Ft. level is accessible and in good ^{condition}

NOTE

The 265 Ft level ^{station} in the shaft is in poor shape and ^{the level} is partially covered to a point 60 from the shaft. ~~At this point the distance~~ point the level is completely covered and inaccessible.

d. General Features of deposit etc.

Known as the Morgan mine The property lies in a region of low rolling hills. It is the oldest of a group of mines in the Twin Buttes

60

area and is credited with a past production of copper and some silver, valued in excess of \$2,000,000. This production was made many years ago and the ~~old workings~~ ^{except for the upper portion of the old vertical shaft,} are all caved. The ore occurred along a ^{trending} east-west contact between a mass of brown and green garnet and an area of mixed shale, sandstone and conglomerate.

steep
east-west

The present interest in the property is centered about a series of tungsten bearing quartz veins which strike in a NE-SW direction with dips ranging from 45 to 70° northwesterly. These veins are quartz filled fissures in the ~~soft~~ shale-sandstone-conglomerate and vary in width from a few inches to a maximum of about 9 feet with widths ~~common~~ of 2 to 4 feet quite common. Several strong faults have been identified on

the surface and ~~The Preliminary Development Lease~~ was granted for the purpose of unwatering and stabilizing the shaft and the ~~265 foot~~ ²⁶⁵ ft. ~~east west drift~~ ^{with the 265 ft. level.} Previous to the granting of the lease a considerable amount of surface work had been done upon a large main quartz vein and upon a number of parallel veins of varying size. ^{quite} it seems probable that several of the larger of these veins are ^{actually} faults. Segments of the main vein. If this is true ~~it would~~ ^{be} ~~seem~~ ^{be} logical to expect that many of the ~~at~~

~~will exist as regards the other veins i.e.~~
~~these will be a similar~~
 other parallel ~~veins~~ ^{exposed on the surface} will fall into a similar fault pattern governed by the main faults.

Previous to the granting of a Preliminary Development Loan a considerable amount of work had been done upon the surface particularly in a shaft which was sunk to a depth 40 feet. The recommendation for a loan was based upon samplings which showed WO_3 content of .55% to .83% WO_3 in the shaft across a vein width of 5 to 9 feet, but ~~more particularly~~ ^{and} upon the results from milling ~~of~~ ^{approximately} 170 tons of ore in a custom mill at Tucson which showed a lead assay of .67% WO_3 . ~~Some~~ ^{Some}

crosscut in a ~~which~~ ^{northerly direction} ~~cut~~ ^{was} done on the 165 Ft. level. This work encountered several ~~for~~ ^{strung} and small masses of quartz containing some scheelite but no ^{quartz} body of consequence. A projection of the indicated dip of the vein in the shaft shows that the face of the crosscut is some 40 feet short of an intersection with the vein. Criticism of this crosscut would have been a logical development but the opening of the 265 Ft. level seemed more desirable at that time because of

indicated on an old map,
 the position, [^] of a large
 quartz vein crossing the west drift
 on this level at 70 ft. from the shaft.
 It was ~~believed that the shaft and~~
~~the level would be found to be~~
~~readily accessible after unwatering the~~
~~30 feet of water which stood above the~~
~~level~~

No. 11 The water in the shaft stood at 30 feet
 above the level and it was believed
 that the shaft and level would be
 readily accessible upon unwatering.
 Actually the shaft station was found to
 be cased, the shaft timbers were not
~~except for the~~ ~~main~~ ~~compartment~~ between
 the 165 Ft. level and the 265 Ft. level
 except in the main compartment, and
 the west drift was ^{partially} ~~found to be~~ cased
 for a distance of 60 ft from the shaft
 and completely cased at that point.
 Continued work on this level would
 be a job of considerable magnitude
 involving shaft ^{and station} ~~timbers~~ ^{and} ~~cleaning up~~
 and timber, with ^{possibly} ~~considerable~~ spiling
 in the drift. Also the level would
 have to be kept pumped clear of water.
 In view of the above it was judged
 wiser to abandon the proposed work
 on this level and instead develop
 on the 165 Ft. level. ~~with the direction of~~
 Additional considerations beside the

X

Probably excessive
 cost of the work ^{million level} ~~was~~ the fact that
~~the~~ ~~work~~ development on the upper
 level would be near the surface
 ore, and the fact that the work
 on the 265 FT. level will be
 along the contact whereas ^{all} the ^{surface}
 showings and the face of the 165 FT
 level crosscut are at some distance
 southwest of the contact.

The Borrower statement as of
 May 10 shows a balance ~~remaining~~
 in the trust fund of \$1,111,61. The
 money has been spent judiciously. It
 is notable that by contracting the work
 it has not been necessary for the applicant
 to lay out any capital ^{or} equipment
~~property~~ ~~either~~ for either the shaft re-
 habilitation or the unwatering. In the
 latter case a firm in Tucson
 furnished the pumping equipment
 and the expert help needed in ~~erecting~~
 rigging up the machine, and pump shafting and pipe. It
 is proposed to ^{continue} ~~carry~~ the development
 on ~~the same~~ a contract basis ^{at \$500}
~~per foot, the contract furnishes~~ ~~the~~

© Proposed development

The applicant proposes to
 do 200' or more feet of development on
 the 165 FT level, consisting of crosscutting ^{to} the veins or
 veins and drifting and raising as

indicated ^{by} the progress of the work.

It is proposed to do the work on a contract basis at \$15⁰⁰ per foot, the contractor furnishing the equipment.

The project is near the settlement of Twin Buttes and no camp accommodations will be required.

No expenditure beyond the contract price of the development is contemplated.

The outlook for ore is based upon the number of tungsten bearing veins ~~as~~ which have been developed or indicated upon the surface, and more particularly upon the record obtained from the milling of 3 lots of ore from the property. Fairly complete data is available regarding the first 2 lots, shipped ^{to a custom mill} ~~totally~~ 139. ~~of~~ tons. The applicant includes a settlement statement regarding these shipments which shows a mill head average of .625% WO₃. The last mill lot totalled 277 tons ^{and} ~~recorded~~ 1650 lbs of concentrate or approximately 6 lb. per ton. ~~While~~ A complete mill report is not available as in the case of the first two lots but by assuming a concentrate grade of .160% WO₃ and a recovery of 50% it will be seen that approximately .18% WO₃ per ton was recovered and mill heads ran approximately .36% WO₃.

The low recovery is explained by the fact that the mill is ~~rather crude~~

not designed for treating this type of ore.
~~The schedule is generally, as fine as~~
~~in very fine grains. There is no provision~~
 for removing the larger crystals ^{by screens} ~~and~~
 freed and thus ^{avoid} ~~avoid~~ ^{sluicing} ~~sluicing~~
 of the scheelite. Also, since much of
 the scheelite is very fine the material should
 be finely ~~ground~~ and the product floated,
~~size and float the slime float the~~
~~product~~ after tabling. It would probably be necessary
 to treat the float concentrate on slime
 tables to ~~bring it up to~~ ⁱⁿ ~~size~~ raise its grade.
 The ^{last mill lot} ~~shipment~~ was derived from the balance
 of the dumps, ^{material} not included in the first
 two shipments and from some open cut
 work on a new near the shaft. Further
 development in the shaft would be
 required ~~making~~ ^{purchase} of equipment and
 it seemed more advisable to open the
 old vertical shaft and develop from it
 as described above. The shallow shaft
 was not accessible at the time of this
 examination but ~~the vein~~ the vein could
 be seen to be wide in the bottom. The
 statement is made by reliable persons
 that the values are continuous in the bottom
 and this statement is supported by the mill runs ^{which indicate}
 Judging from the results of mill runs
 and from assays by various persons the
~~vein~~ the more favorable portions of the vein
 at the surface seem capable of producing
 a grade of ore ranging between ~~and~~ 38% ^{100%}

P

considerable material
 from the shaft

Comments of Supervising Engineer

~~Project~~

and .78% $W O_3$, or around .50% $W O_3$

Comments of Supervising Engineer

~~The project has demonstrated~~

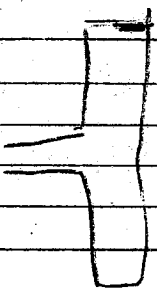
Development of the property to date has disclosed ~~in the surface~~ a close grouping of scheelite bearing veins on the ^{surface} and Mill runs amounting to several hundred tons ^{have} demonstrated the presence in the veins of sheets of material containing commercial amount of $W O_3$.

Further development of the veins at depth in the manner proposed by the applicant ^{appears to be} a logical ^{and} justifiable procedure and an additional ~~step~~

~~The project~~
to the project is therefore recommended

Cross first

N 65° E



2 - 7'

Just City class
need night car.
arm sp. 14
on stone

4th
 8
 15
 120

30
 140

20
 40
 10
 640



root

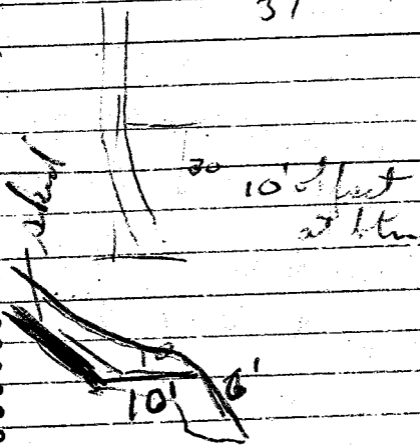
Shift

$\frac{1}{2} m$

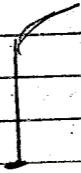
Strike N 10 E

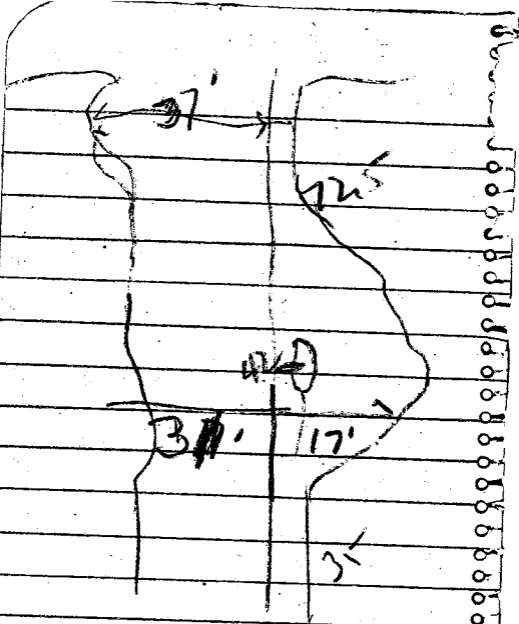
Shaft S 80° E dip

37°

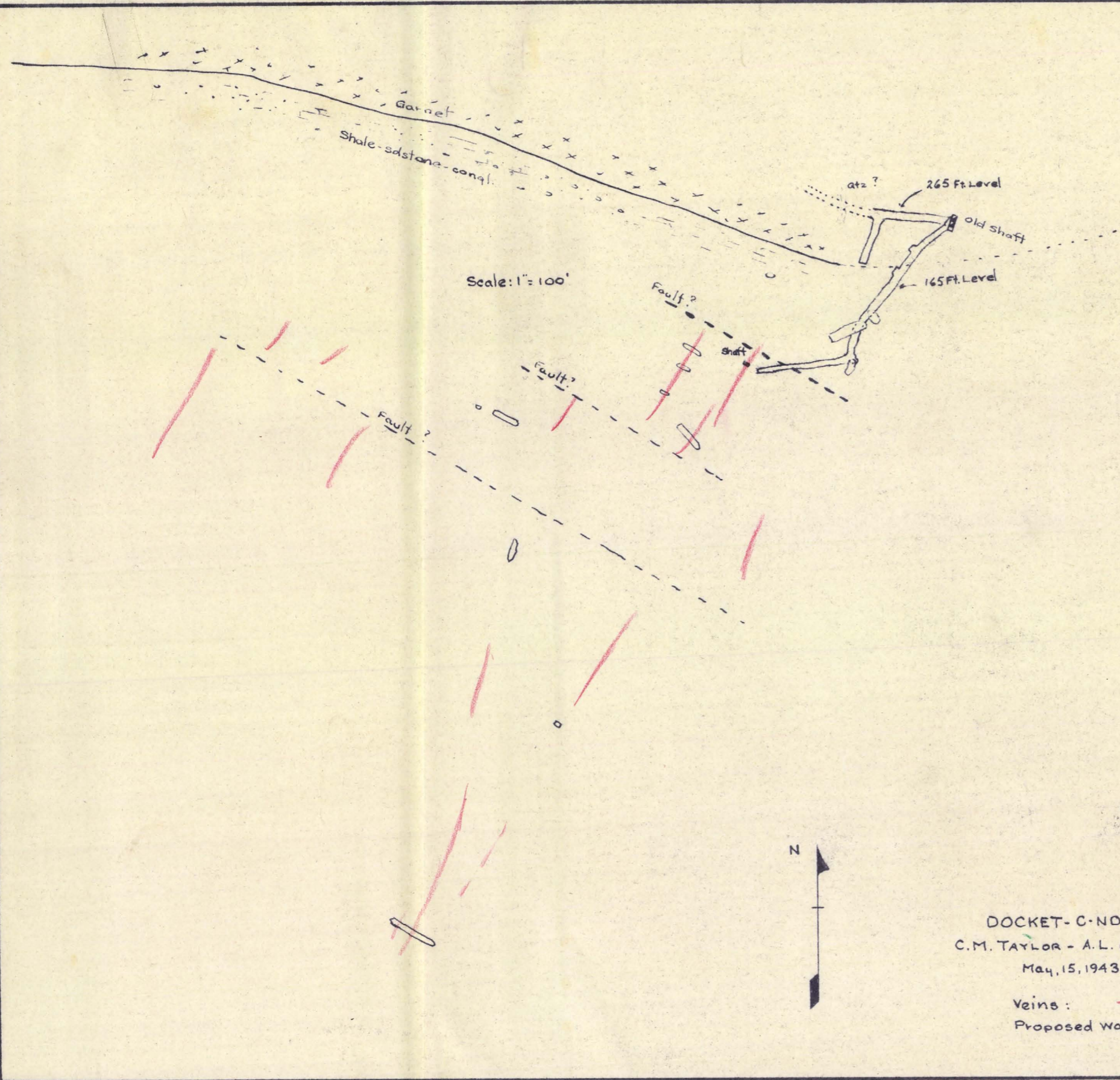


10' 6''





Shaft is 114'
to end skids 37'



DOCKET-C-ND-8024
 C.M. TAYLOR - A.L. GORMAN
 May, 15, 1943

Veins : ———
 Proposed Work : ———

