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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.

New Customhouse
Denver 2, Colorado

February 19, 1953

Memorandum

To: Secretary to the Operating Committee, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 2752 (Uranium) Atomic Energy Uranium, Inc., Pewabic-Iron Mine, Gilpin County, Colorado

Enclosed are the original and three copies of the report pertaining to the above application.

The field examiners conclude that the known pitchblende occurance on the third level warrants some exploration, but does not justify rehabilitation of the shaft below the third level at this time.

If this revised program is acceptable to the applicant we recommend it.

The applicant corporation represents itself to be the owner of this property, but apparently the title is held in trust subject to the terms of a note for $55,000. It is suggested that the details and present status of this mortgage be carefully studied before any commitments are made.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
3-2-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

February 19, 1953

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 2752, (Uranium) Atomic Energy Uranium, Inc., Pewabic-Iron Mine, Gilpin County, Colorado

Enclosed are 10 copies of the final engineering report on the subject docket.

The applicant requested $27,700 to completely recondition the Iron shaft for a full scale mine operation. The examining engineer believes any work below the third level is not warranted at this time, but he does recommend a small amount of work down to and including the third level at a total cost of $9,815.00.

If this revised program is not acceptable to the applicant, we recommend that the application be denied.

W. H. King
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
3-2-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
February 27, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 2752 (Uranium), Atomic Energy Uranium, Inc. (Pennsylvania-Iron mine), Gilpin County, Colorado

Please find enclosed the original and ten copies of the "Summary, Conclusions, and Recommendations", by Frank J. Kulina and D. R. MacLaren, and of Kulina's engineering report on the subject docket.

Kulina concludes the applicant's request for reconditioning the Iron shaft to make it satisfactory in all respects for a full-scale mine operation is not necessary and also considers rehabilitation of the mine workings below the third level in the same category. He does, however, consider the pitchblende showing in a crosscut and drifts on the third level west of the shaft merit a limited amount of exploration. He recommends a minimum amount of shaft repair, sufficient to permit safe passage of men up and down the manway and lowering supplies through the hoisting compartment, and preparation of the third level to allow for dumping waste from 150 feet of drifting and 75 feet of raising in old stopes below the level. The cost of this work is estimated at $9,815.00.

I concur with his conclusions and recommendations.

The proposed program may not be acceptable to the applicant as it is suspected Atomic Energy Uranium, Inc., may intend to utilize the present interest in uranium for obtaining financial aid for subsequent mining operations in the event immediate project results are negative. If such proves to be the case, denial of this application is recommended.

W. M. Traver

W. M. Traver

enclosures

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DMEA 2752
Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.
200 New Customhouse
Denver 2, Colorado

February 10, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 2752, Atomic Energy Uranium, Inc., Pewabic-Iron Mine, Gilpin County, Colorado.

Attached are 10 copies of the geological report by D. R. MacLaren, and the Summary, Conclusions, and Recommendations, by F. J. Belina and D. R. MacLaren, covering DMEA Docket 2752, Atomic Energy Uranium, Inc., Pewabic-Iron Mine, Gilpin County, Colorado.

The applicant proposes to explore an occurrence of pitchblende on the 300-foot level of the mine, and to unwater and rehabilitate the lower levels of the mine to prospect for other possible occurrences of pitchblende.

The rocks in the mine are pre-Cambrian gneiss and schist intruded by granite pegmatites and early Tertiary? bostonite dikes and sills. Veins in the mine carry pyrite, galena, marmatite, sphalerite, silver, and gold, in a gangue of quartz. The veins have been extensively developed and mined through the iron shaft.

Pitchblende has been found on the 300-foot level, the only accessible level at the time of examination, at 2 places. MacLaren points out that there is no evidence of any other occurrences of pitchblende other than that found, and that any ore body discovered will probably be small, as are all the pitchblende ore bodies so far discovered in this district. He concludes thatthe known pitchblende occurrence warrants some exploration, but recommends that a minimum amount of rehabilitation of the 300-foot level be done. He also recommends that rehabilitation of the mine below the 300-foot level be held in abeyance, pending results of work on the 300-foot level.

I concur in this recommendation.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (10)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 2752, Atomic Energy Uranium, Inc.

Pewabic-Iron Mine

Gilpin County, Colorado

Uranium

Frank J. Belina, Mining Engineer
Bureau of Mines

D. R. MacLaren, Geologist
U. S. Geological Survey

February 13, 1953

Reviewed by
DMEA OPERATING COMMITTEE

3-2-53
(date)

DMEA 2752

ATOMIC ENERGY URANIUM, INC.
PENABIC-IRON MINE
GILPIN COUNTY, COLORADO

Summary, Conclusions, and Recommendations

By Frank J. Belina
Mining Engineer
Bureau of Mines

and

D. R. Maclaren
Geologist
U. S. Geological Survey

DMEA 2752

ATOMIC ENERGY URANIUM, INC.
PEWABIC-IRON MINE
GILPIN COUNTY, COLORADO

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By Frank J. Belina and D. R. MacLaren

Atomic Energy Uranium, Inc., of Denver, Colo., has applied to the Defense Minerals Exploration Administration for assistance to explore for uranium in the Pewabic-Iron mine, Gilpin County, Colo. The applicant proposes to spend $27,770.00 (Government participation—$24,993.00) to explore an exposure of pitchblende on the third level and to unwater and rehabilitate the lower levels of the mine to prospect for other possible occurrences of pitchblende.

An examination of the mine disclosed that the occurrence of pitchblende on the third level warrants limited exploration, provided that the preliminary rehabilitation work can be kept down to a moderate cost and that the work proposed below the third level is not warranted at the present time.

It is recommended that the original proposal as presented by the applicant be modified to allow for:

(1) Repair of the Iron shaft from surface to the third level only to the extent that it will serve as a safe manway, installation of air and water lines, and provision for lowering supplies through the hoisting compartment with a tugger hoist.

(2) Repair of the main drift west from the Iron shaft on the third level only to the extent that it will be a safe passageway for the men to and from the site of their work.

(3) Drifting up to a maximum of 150 feet on the pitchblende occurrence shown on the plan maps.

(4) Raising up to a maximum of 75 feet on the best showing developed by the drifting.

It is estimated that the cost of the modified program will be $9,815.00 (Government participation—$8,833.50).

PEWABIC-IRON MINE
GILPIN COUNTY, COLORADO

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Atomic Energy Uranium, Inc., of Denver, Colorado, has applied to the Defense Minerals Exploration Administration for assistance to explore for uranium in the Pewabic-Iron Mine, Gilpin County, Colorado. The applicant proposes to spend $27,770 (Government's share $24,993) to explore an exposure of pitchblende on the 300 foot level and to unwater and rehabilitate the lower levels of the mine to prospect for other possible occurrences of pitchblende.

An examination of the mine disclosed that the work proposed below the 300 foot level is not warranted at the present time, but that the occurrence of pitchblende on the 300 foot level warrants limited exploration provided that the preliminary rehabilitation work can be kept down to a moderate cost.

It is recommended that the original proposal as presented by the applicant be modified to allow for repair work only sufficient to provide a safe passageway through the shaft and the iron drift to the site of the exploration, and to allow for 150 feet of drifting and 75 feet of raising on the pitchblende bearing vein. It is estimated that the cost of the modified program will be $9,815.00 (Government's share $8,833.50).

ATOMIC ENERGY URANIUM, INC.

PEWABIC-IRON MINE

GILPIN COUNTY, COLORADO

OMEA DOCKET 2752

Geologic Report

By D. R. MacLaren
U. S. Geological Survey

PEWABIC-IRON MINE
GILPIN COUNTY, COLORADO

INTRODUCTION

Atomic Energy Uranium, Inc., of Denver, Colorado, has applied to the Defense Minerals Exploration Administration for assistance to explore for uranium in the Iron Mine, Russel Mining District, Gilpin County, Colorado. The mine, in sec. 23, T. 3 S., R. 73 W., is easily accessible throughout the year over half a mile of unimproved gravel road from the town of Russel Gulch, which in turn is 3 miles south of Central City on State Highway 279.

The applicant proposes to determine the extent of a pitchblende occurrence on the 300 foot level of the Iron mine by drifting 300 feet and raising 100 feet, and to unwater the lower levels of the mine to examine them for possible occurrences of pitchblende. The applicant estimates that the cost of this program will be $27,770 (the Government's share $24,993).

Engineers for the AEC and geologists for the Reconnaissance Group of the U. S. Geol. Survey have examined this property and have kindly made available to the DMEA examining team all the information on hand, much of which has been incorporated into this report. F. J. Bolins, of the U. S. Bureau of Mines, and G. C. Ridland, consultant for the applicant, visited the mine on November 30, 1952, but were not able to reach the 300 foot level as some of the ladders were missing from the manway in the shaft. Ladders were installed and on January 5, 1953, D. R. MacLaren of the U. S. Geol. Survey and F. J. Bolins of the U. S. Bureau of Mines accompanied by Tom Otter,

employed by the applicant, visited the mine and were able to reach the 300 foot level without difficulty.

It is concluded that:

1. The proposed work below the 300 foot level is not justified at the present time.

2. An occurrence of pitchblende in a cross-cut and drift south of the Iron vein, 525 feet west of the Iron shaft, warrants further exploration. However, because of the small size of other pitchblende bodies occurring in the district and the probability that this body will be similarly small, the preliminary expense necessary for the complete rehabilitation of 300 feet of shaft and 525 feet of drift is not warranted (see section on applicant's exhibit "B"). Therefore, it is recommended that the application as presented be denied. An alternative program, estimated by the Bureau of Mines to cost $9,815.00 (Government's share $8,833.50) is recommended for approval should it be acceptable to the applicant.

GEOLOGY

The geology of the area has been described by Bastin and Hill (1917). The rocks are pre-Cambrian gneiss and schists of the Idaho Springs formation that have been intruded by pre-Cambrian granite pegmatite and late Cretaceous or early Tertiary hornblende dikes and sills. Northeast to easterly striking fissures have been filled by veins that contain pyrite, galena, sphalerite, silver and gold, in a gangue of quartz.

In the Iron mine three veins (fig. 2) have been producers of gold, silver, and lead ores. They are the Iron vein which strikes nearly east and west and dips from vertical to 75° S.; the Richardson vein which strikes

about N. 45° E., and dips 65°-80° S., and the Grasshopper vein which appears, on the 300 foot level, to be a continuation of the Iron vein, but which Austin and Hill say makes a true junction with the Iron vein on the 400 foot level. These veins have been extensively developed and mined through the Iron shaft.

Pitchblende has been identified on the 300 foot level at only two locations. At the northeast end of the Richardson vein, Ridland reports that he found a small patch of pitchblende, but in conversations with a representative of the AEC he stated that he had removed the entire patch with a prospector's pick and that to his knowledge no more pitchblende was found in that area. A 55 foot cross-cut, driven south from the Iron vein 525 feet west of the Iron shaft, cut a vein 6 to 30 inches wide that is principally quartz containing varying amounts of disseminated pyrite, galena, marmatite, and chalcopyrite (?). A drift at the south end of the cross-cut has followed this vein for about 31 feet to the west and 16 feet to the east. At the west end the vein has been partially stoped above the drift, and a raise inclined to the west, now inaccessible, is of unknown height. Near the east end of the drift the vein, 2 to 8 inches wide, is quartz, pyrite, clay, and sericite, with thin laminated streaks of pitchblende, less than a quarter of an inch thick. The AEC engineers took 9 samples from the vein that show there is no uranium mineralization of any consequence west of the cross-cut (fig. 3). The U. S. Geol. Survey sampled a 0.3 foot streak at the end of the cross-cut which assayed 1.38% U_3O_8. The DMEA examining team took two check samples at locations 9 and 10.

The assays of all samples taken were:

Sample No.	Width Feet	Description	Samples taken by AEC % U_3O_8	USBS % U_3O_8	BMGA % U_3O_8
1	0.5	HW qtz, pyrite, galena, clay	.001		
2	1.9	FW qtz, pyrite	.001		
3	2.8	Qtz, pyrite,	.001		
4	1.6	HW qtz, pyrite, clay, zinc, galena	.001		
5	1.6	FW qtz, pyrite	.001		
6	2.0	Qtz, pyrite, zinc	.001		
7	0.6	Qtz, pyrite, clay	.001		
8	1.5	Qtz, pyrite	.002		
9	0.6	Qtz, pyrite, pitch-blende	2.02		.012(0.6')
10	0.5	Qtz, pyrite, pitch-blende		1.38	.087(2.2')

The weighted average of the two samples at location 9 is 0.6 feet at 1.07% U_3O_8 and at location 10 is 1.25 feet at .224% U_3O_8.

MINE DEVELOPMENT

The Iron shaft has been driven on the Iron vein to a depth of 700 feet, and seven levels have been turned at depths of 120, 250, 300, 400, 500, 600, and 700 feet. At present only the 300 foot level is accessible as the upper levels are caved at the shaft and the lower levels are flooded. Normally the water level stands about 15 feet above the 400 foot level, but during the spring thaws excessive seepage from the surface raises the water level to, and sometimes above, the 300 foot level. Drainage from the normal water level is said to be through a diamond drill hole, EX size,

near the Becky Sharp shaft, into the workings of the Old Town mine which is connected with the Argo tunnel.

On the 300 foot level (fig. 2) the iron vein has been followed about 880 feet west and 190 feet east of the shaft. From the east end of the iron vein the Richardson vein has been followed 550 feet northeast and the Grasshopper vein has been followed 250 feet east. A cross-cut, driven south from the iron vein about 45 feet east of the shaft, cuts two easterly striking veins. One of these, the Mars, also known as the Golden Opportunity, vein has been followed for 185 feet. A second cross-cut south from the iron vein has been described in the section on geology.

CONCLUSIONS

It is concluded that at the present time there is no evidence of pitchblende other than that in the cross-cut and drift south of the iron vein 525 feet west of the shaft, and that therefore the rehabilitation proposed below the 300 foot level is not yet justified. It is also concluded that the known pitchblende occurrence warrants further exploration, but it is likely that any ore body discovered will be small as are all other pitchblende bodies so far discovered in this district. Therefore, complete rehabilitation of the iron shaft from the surface to the 300 foot level, and of the iron drift from the shaft to the cross-cut will be too costly to be justified.

RECOMMENDATIONS

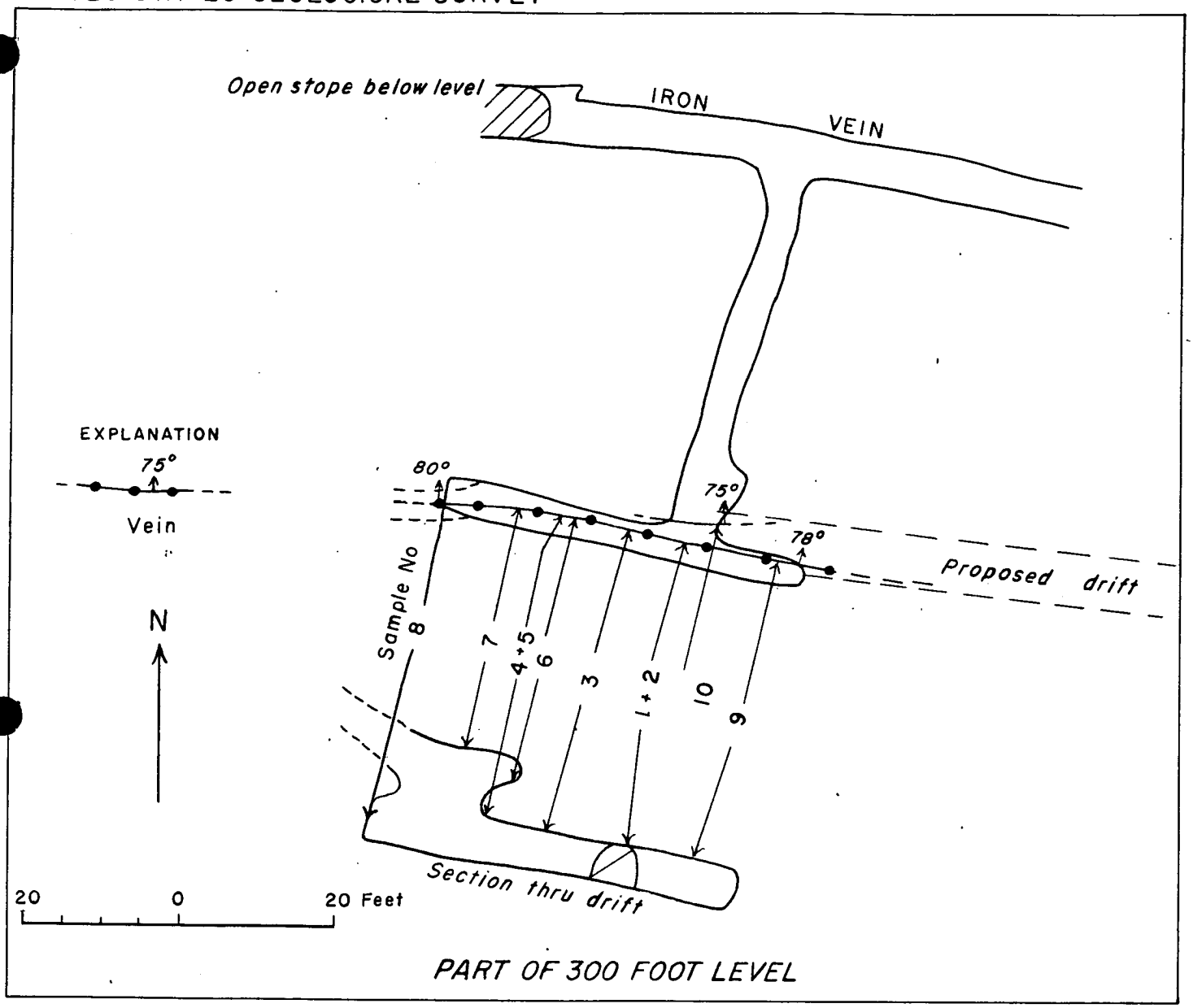
It is recommended that the minimum amount of shaft repair work be done to make the manway safe and the skipway serviceable for the handling of

supplies, and that only sufficient retimbering be done in the drift to make it a safe passageway. It is also recommended that the pitchblende showing be followed for 150 feet on the level and that 75 feet of raise be driven to test the vertical extent of the pitchblende shoot. The location of the raise should be determined after completion of the drift, or at least after the east limit of the shoot has been determined. A large open stope in the iron vein below the level, 30 feet west of the cross-cut, can be used for disposal of development muck thus making it unnecessary to lay track the full 525 feet to the shaft and hoisting muck to the surface. The Bureau of Mines estimates that the cost of this curtailed program will be $9,815.00, the Government's share $8,833.50. Should this curtailed program be acceptable to the applicant, it is recommended that it be approved. In any case, it is recommended that the original program as presented in the application be denied.

REFERENCES

Bastin, E. S., and Hill, J. M., U. S. Geol. Survey Prof. Paper No. 94; Economic geology of Gilpin County and adjacent parts of Clear Creek and Boulder Counties, Colo., 379 pp., 23 pls., 1917.

Anderson, T. P., and Towle, C. C., Atomic Energy Commission RMO 634; Investigation and recommendation for the exploration of an uranium occurrence in the Iron mine, Russel Gulch, Gilpin County, Colo., 7 pp., 2 sketches, 1951.



By D. R. MacLaren after C. C. Towle January 1953.

FIGURE 3. PLAN SHOWING GEOLOGY AND LOCATIONS OF SAMPLES, IRON MINE, GILPIN COUNTY, COLORADO.

DMEA 2752

ATOMIC ENERGY URANIUM, INC.
PEWABIC-IRON MINE
GILPIN COUNTY, COLORADO

Engineering Report

By Frank J. Belina
Mining Engineer
Bureau of Mines

DMEA 2752

ATOMIC ENERGY URANIUM, INC.
PEWABIC-IRON MINE
GILPIN COUNTY, COLORADO

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ILLUSTRATIONS

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1. Location map, Pewabic-Iron mine, Atomic Energy Uranium, Inc., Gilpin County, Colorado	2
2. Plan showing level workings and proposed exploration drift, Iron mine, Gilpin County, Colorado	*
3. Plan showing geology and locations of samples, Iron mine, Gilpin County, Colorado	*

* See figure following geological report

DMEA 2752

ATOMIC ENERGY URANIUM, INC.
PEWABIC-IRON MINE
GILPIN COUNTY, COLORADO

ENGINEERING REPORT

By

Frank J. Belina

INTRODUCTION

Atomic Energy Uranium, Inc., 405 Interstate Trust Building, Denver 2, Colo., has applied for a Defense Minerals Exploration Administration loan in the amount of $27,770.00. The corporation proposes to rehabilitate the shaft and workings of the Iron (Pewabic) mine, Russell Mining District, Gilpin County, Colo., to explore an exposure of pitchblende on the third level, and to examine and sample the workings below the third level for similar occurrences.

An attempt was made to examine the mine workings on November 28, 1952. At that time it was impractical to descend below the second level of the shaft because of the unsafe condition of the manway. The applicant corrected this condition and the open workings on the third level were examined on January 5, 1953.

ACKNOWLEDGMENTS

Dr. G. C. Bidland, the applicant's consultant, acted as guide during the first visit to the property. Thomas L. Otter, of Idaho Springs, repaired the shaft manway and served as guide during the examination on January 5, 1953.

The geology of the district and the lower workings of the mine are described in U. S. Geological Survey Professional Paper 94 (1917), by Bastin and Hill. The field work for this report was done at a time when all the mine workings were accessible and can be relied on for detail that is not available to the present-day observer. Information from this paper was used freely in the preparation of this report.

Personnel from the Atomic Energy Commission investigated the property in 1951. Their report was made available to the Bureau of Mines and was used in evaluating the evidence of radioactivity on the third level.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Iron is one of several claims that comprise the Pewabic group. They are located on the south side of Russell Gulch in sec. 23, T. 3 S., R. 73 W., Gilpin County, Colo. (fig. 1). A short unimproved road to the Iron shaft branches from Colorado State Highway 279 at a point 3 miles southwest of Central City or 2-1/2 miles north of Idaho Springs.

The claims lie in an area of relatively gentle relief at an average altitude of 9,150 feet. The general area has been the scene of intense mining activity in the past and the landscape is scarred by old dumps and abandoned workings.

The climate is temperate, with a mean annual temperature of 38° F. Snowfall is not excessive and mining operations are carried out throughout the year.

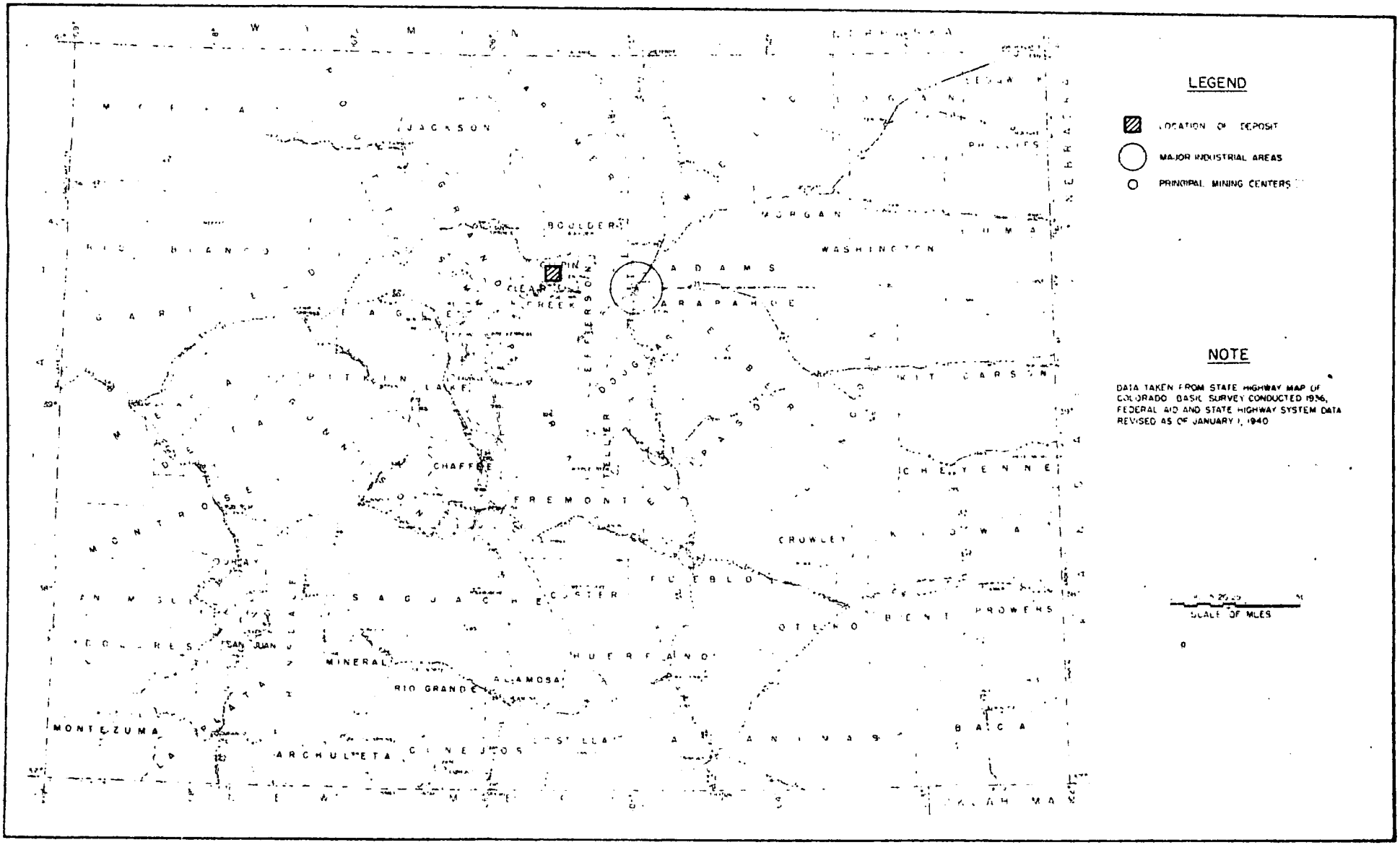


FIGURE 1 - LOCATION MAP, PEWABIC-IRON MINE, ATOMIC ENERGY URANIUM, INC., GILPIN COUNTY, COLORADO (DMEA 2752)

Water for mining purposes and electric power are available at the collar of the Iron shaft. Denver, 35 miles east, is the main supply center.

HISTORY AND PRODUCTION

The district has a production record dating back to 1859 when placer gold was discovered in Russell Gulch. Reliable production figures give a value of $95,000,000 to the metal produced from Gilpin County mines during the years 1859-1914, which was the period of the most intense activity. Ninety-five percent of the value of the ores has been from the precious metals. The bulk of the production has come at shallow depths from the exploitation of a large number of high-grade small veins under separate ownership.

Pitchblende was first identified in the ores of the district in 1871. Production in small lots of high-grade material has been recorded from several of the mines during the period 1872-1916.

OWNERSHIP AND EXTENT

The applicant corporation represents itself to be the owner of the property on which it requests financial aid to carry out exploration work. Apparently the title is held in trust, subject to the terms of a note for $55,000.00, payable to G. P. Griffith and L. D. Burt as surviving directors and trustees of Pewabic Mining and Milling Company. A payment of $5,000.00 becomes due on March 15, 1953, and full payment of the balance is due on or before May 15, 1957. The details and present status of this mortgage should be carefully studied before any commitments are made.

The position of the pitchblende exposure on the third level from the Iron shaft relative to the property lines has not been exactly determined. Continuation of exploration work to the west on the apparent strike of the vein would pass into ground under other ownership in about 150 feet. However, work proposed in this application lies to the east of present vein exposures and will be well within the property lines as described in the loan request.

DESCRIPTION OF THE DEPOSITS

The geology and ore deposits of the district are described in detail by Bastin and Hill in U. S. Geological Survey Professional Paper 94. In the vicinity of the Iron mine, numerous steeply dipping east-west veins occur along fracture zones in a country rock of pre-Cambrian granite gneiss that has been intruded by Bostonite porphyry dikes. The Iron, which is one of the better developed veins of this system, has been exposed by mine workings through a strike length of over 1,200 feet and to a depth of 700 feet below surface. Evidence from old maps and from accessible openings in the shaft and on the third level indicates that it has been stoped through a large part of this area.

As exposed on the third level, the Iron vein strikes east-west and dips vertically to 75° south. It follows a strong fracture zone in granite gneiss. Sulfide mineralization—primarily pyrite with some chalcopyrite, and later galena and sphalerite—is disseminated in the altered gneiss in widths from a few inches up to

6 feet. Bastin and Hill comment on the mineralization as follows: "Although pyrite is the principal ore mineral, chalcopyrite and tennantite also occur in more or less pockety distribution and commonly indicate comparative richness. In most places where the ore carries over 2 ounces in gold, it also carries copper in commercial amounts (over 1.5 percent). The coarse pyrite is prevailingly of low grade, but much of the fine pyrite is fairly rich in gold." The occurrence of pitchblende is reported, but to what extent it occurred in the previously mined ore is not known. Past studies by Bastin and Hill of polished sections of the ores indicate that, "the pitchblende is contemporaneously intergrown with the same suite of minerals that characterizes the ores of the pyritic type".

Personnel from the Atomic Energy Commission traversed the accessible workings on the third level in February 1951. They found no evidence of radioactivity except in a parallel vein that on this horizon lies about 55 feet to the south of the Iron vein, but dips steeply to the north. This vein is exposed in short drifts east and west from a crosscut driven from the drift on the Iron vein at a point 525 feet west of the shaft (fig. 3 with the geological report). It pinches out in the breast of the drift to the west, where it has been stoped above to an undetermined height. In the drift to the east, the vein goes into the north wall about 4 feet back from the breast. Vein exposures in the back of the drift and in the crosscut are radioactive.

A weighted average of samples taken by the applicant's consultant over a strike length of about 30 feet assayed 0.27 percent U_3O_8 over a width of 2.7 feet. Samples in this exposure taken by personnel from the Atomic Energy Commission average 0.09 percent U_3O_8 over a width of 2.5 feet, provided that samples 9 and 10 are weighted to an over-all width of 5 feet.

The Bureau of Mines engineer took two samples as shown on figure 3 with the geological report, with the following widths and assay values:

Sample number	Width, feet	Percent U_3O_8	Ounces per ton Au	Ounces per ton Ag	Percent Pb	Percent Zn
FJB-1	0.6	0.012	0.10	1.1	0.2	<.05
FJB-2	2.2	.067	.02	.1	<.1	<.05

Note: Sample FJB-1 corresponds to AEC sample 10 and sample FJB-2 corresponds to AEC sample 9 with respect to location.

Comparison of Assays

	Width, feet	Percent U_3O_8
Bureau of Mines samples, weighted to include 2.2 feet of waste between mineralized zones	5.0	0.031
Atomic Energy Commission samples 9 and 10, weighted as above	5.0	.32
Applicant's two samples in same exposure	6.0	.27

The results of the sampling indicate a very erratic distribution of pitchblende in the mineralized zone.

MINEABLE ORE RESERVES

Too little is known about the character and extent of the pitchblende mineralization in the veins of the district to assign any reserve to the occurrence.

The applicant's engineer has sampled the vein material remaining in the old stoped areas of the Iron vein and has computed a reserve with values in gold and silver. Inasmuch as this area is not radioactive, the ore reserve is not considered to be pertinent to the investigation.

PRESENT STATUS

Exploration, Development, and Existent Equipment

The Iron mine has not been worked for some time and all equipment, including the surface plant, has been removed. According to old reports, the underground workings consist of a shaft 700 feet deep that follows the dip of the vein and seven levels cut at irregular intervals.

The shaft is open and in fair shape down to the third level, 298 feet below the collar. It has two compartments and averages 5 by 8 feet in cross section inside the timber. It is timbered with solid cribbing down to a point 32 feet below the collar. This cribbing is still sound and in good shape. Below this point the shaft is timbered with three rows of stulls on an average of 5-foot centers. Most of the stulls are still in place and in fairly sound condition. The lining boards in the skip compartment are all loose and many of them are missing. The bucket skids are all loose and

are missing in the interval from 270 to 298 feet below the collar. The vein has been stoped directly off both ends of the shaft through much of the interval between the cribbed section and the third level. In these stoped sections, the ends of the shaft have been lagged off. Much of this lagging is rotted and loose, and the stope fill and loose slabs they retain are definite and serious hazards. The shaft is partially blocked with debris below the third level and the elevation of the water could not be determined, but all the lower levels are reported to be flooded. Most of the stulls appear to be still in place to a point at least 75 feet below the third level.

The first and second level drifts are choked with fill directly off the shaft and are inaccessible.

The workings on the third level are practically all still open and lie as shown on figure 2 with the geological report. The vein has been stoped throughout much of this area, both above and below the level. In some cases the back of the main drift has been stulled to support the fill, but open sections both above and below the level are hazards to safe passage.

PROJECT PROPOSALS, WITH COSTS

The applicant proposes to:

(1) Unwater and rehabilitate the Iron shaft to the bottom (700 feet).

(2) Clean up and lay track on the third level, west of the Iron shaft.

(3) Drift east 150 feet on the pitchblende-bearing vein on the third level from a point 525 feet west of the Iron shaft.

(4) Drift west 150 feet, same location.

(5) Raise 100 feet on the pitchblende vein, location to be chosen after completion of (3) and (4).

(6) Clean up and rehabilitate any caved drifts below the third level in order to examine lower workings for pitchblende exposures.

(7) Examine, sample, and map levels below the third level.

The applicant's estimate of the cost of labor and supplies for this work is $27,770.00.

Any shaft rehabilitation work under item (1) below the third level and all of items (6) and (7) are considered to be beyond the scope of the Defense Minerals Exploration Administration program. Even if this type of work was allowable, the net contribution to the fund of knowledge regarding pitchblende mineralization in the district would be negligible. The possibility that the applicant is attempting to use the current interest in uranium to subsidize a later gold mining operation should be considered.

Direct exploration work on a definite, even though small, occurrence of primary uranium, such as shown in illustrations, can be considered in a different light, provided that the expenditure for "dead work" can be held to a reasonable figure. The determination of the extent and grade of mineralization would assist in evaluating similar occurrences and thus help to determine the production potential of the district.

If the applicant will agree to a revised program pointed toward a definite target, the following work can be recommended:

(1) Repair the Iron shaft from surface to the third level to the extent that it will serve as a safe manway, install air and water lines, and make it safe for lowering supplies through the hoisting compartment with a tugger hoist.

(2) Repair the main drift west from the shaft on the third level only to the extent that it will be a safe passageway for the men to reach the site of the work. The track will not be replaced; the men can carry their tools and supplies.

(3) Drive a drift with a maximum 5-by 7-foot cross section east on the pitchblende occurrence shown on the plan maps. The length of the drift shall depend on the persistence of the vein. A maximum length of 150 feet is recommended and is used for cost computation purposes. Light rail can be laid in the crosscut and the muck from drifting dumped in the open holes to stopes west of the crosscut along the main drift below the third level.

(4) Drive a raise with a maximum 4- by 6-foot cross section on the best showing developed by the drifting if mineralization found justifies such work. Muck disposal can be the same as in (3), and here, too, the length of the raise should depend on the persistence of the pitchblende mineralization in vein. A maximum length of 75 feet is suggested.

The work can be done by a two-man crew; one of the men will be designated as lead man and paid a higher rate. The $16.25 per man-shift used in the cost estimates is an average figure computed from a base rate of $1.75 per hour for miner and $2.00 per hour for lead

miner, for a 48-hour work week. The employer's share of the social security and workman's compensation is considered separately under miscellaneous items.

ESTIMATED PROJECT COSTS

Rehabilitation
(Time required: 1-1/2 months)

New Facilities and Fixtures		none
Operating Equipment		
Depreciation	none	
Purchase	none	
Rental		
Compressor, $225.00 per month, 1-1/2 months	$337.50	
Tugger hoist, $75.00 per month, 1-1/2 months	112.50	$ 450.00
Labor		
Shaft repair, 30 man-shifts at $16.25 per shift	$487.50	
Drift, 12 man-shifts at $16.25 per shift	195.00	
Track, 4 man-shifts at $16.25 per shift	65.00	
Pipe, 16 man-shifts at $16.25 per shift	260.00	
Miscellaneous, 4 man-shifts at $16.25 per shift	65.00	1,072.50
Operating Materials and Supplies		
Timber		
Shaft, 6,000 board feet at $80.00 per thousand	$480.00	
Drift, 2,000 board feet at $80.00 per thousand	160.00	
Track, 100 feet, 12-pound, including ties, et cetera	115.00	
Pipe		
900 feet, 2-inch at $0.65 per foot	585.00	
900 feet, 1-inch at $0.35 per foot	315.00	1,655.00
Miscellaneous, including social security, compensation, bookkeeping, et cetera		175.00
Power for compressor to provide air for tugger hoist		147.50
Total rehabilitation		$3,500.00

Exploration
Unit Footage Costs

(Estimated completion time for drifting and raising: 3-1/2 months, single-shift basis)

New Facilites and Fixtures		none
Operating Equipment		
Depreciation		none
Purchase		none
Rental	Per month	
Compressor	$225.00	
Tugger hoist	75.00	
Jackhammer and jackleg	75.00	
Bit grinder	25.00	
Mine car	10.00	
	$410.00	
Rental - 3-1/2 months		$1,435.00
Cost per foot, 150 feet of drifting and 75 feet of raising		6.38

Drifting

		Per foot
Labor, 1.5 feet per man-shift, $16.25 per shift		$10.83
Technical services - engineer and geologist		1.00
Equipment rental		6.38
Supplies	Per foot	
Explosives	$4.30	
Track	.75	
Pipe	1.00	
Bits, steel, tools	1.00	7.05
Power		1.25
Miscellaneous, compensation, social security, bookkeeping, et cetera		.50
		$27.01

Total drifting, 150 feet at $27.00 per foot — $4,050.00

Raising

		Per foot
Labor, 1.25 feet per man-shift, $16.25 per shift		$13.00
Technical services - engineer and geologist		1.00
Equipment rental		6.38
Supplies	Per foot	
Timber	$2.12	
Explosives	4.30	
Pipe (50 feet only)	.65	
Bits, steel, tools	1.00	8.07
Power		1.25
Miscellaneous, compensation, social security, bookkeeping, et cetera		.50
		$30.20

Total raising, 75 feet at $30.20 per foot — 2,265.00

Total cost of project — $9,815.00

Government participation - 90 percent — $8,833.50

SUMMARY

A revised program, if acceptable to the applicant, that would reduce the rehabilitation work to a minimum and still serve to explore the occurrence of pitchblende on the third level of the Iron mine could be carried out for an estimated cost of $9,815.00. Of this amount, $3,500.00 would be a rehabilitation charge necessary to prepare the mine for exploration of the pitchblende occurrence. The remaining $6,315.00 is the estimated cost of the exploration work necessary to evaluate the occurrence properly.

CONCLUSIONS

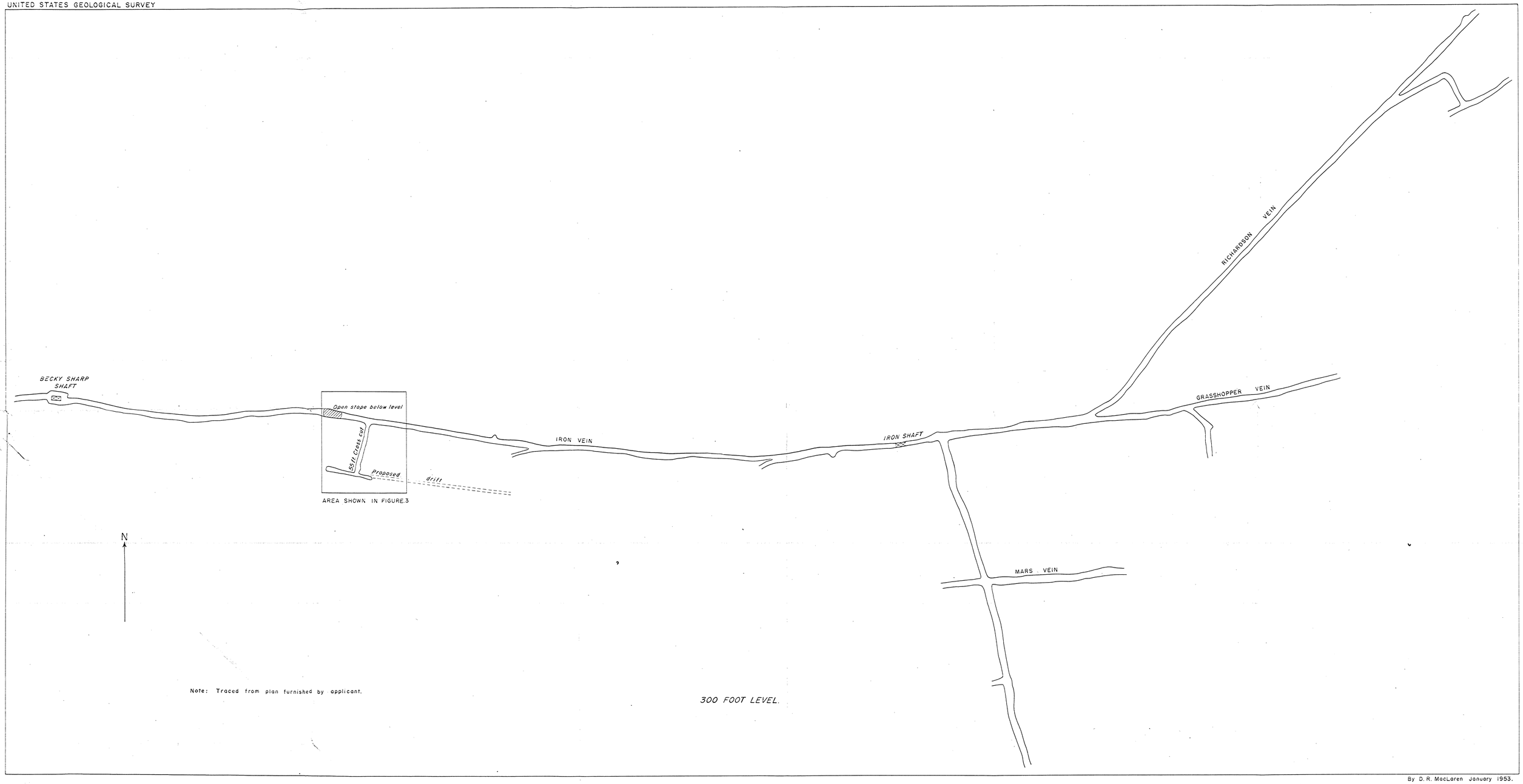
Certain items of work proposed in the loan application--namely, to unwater and rehabilitate the Iron shaft below the third level and to rehabilitate, map, and sample the lower workings for pitchblende--are considered to be beyond the scope of the Defense Minerals Exploration Administration program. Exploration work to delimit the lateral and upward extension of the pitchblende occurrence on the third level can be justified to the extent that it will aid in evaluating similar occurrences and thus contribute toward establishing a production potential for the district.

RECOMMENDATIONS

It is recommended that the application in its present form be denied on the bases that large-scale rehabilitation programs directed toward vague targets are beyond the scope of the Defense Minerals Exploration Administration program and that only a small portion of the funds requested would be spent for work that would be a direct contribution toward evaluating pitchblende occurrences in the district.

If the applicant wishes to participate in a program that will reduce the rehabilitation work to a minimum required for safe mining practice and confine the work to a definite target, the revised program outlined in this report can be recommended at a total over-all cost of $9,815.00, with Government participation $8,833.50. A short-form contract is suggested.

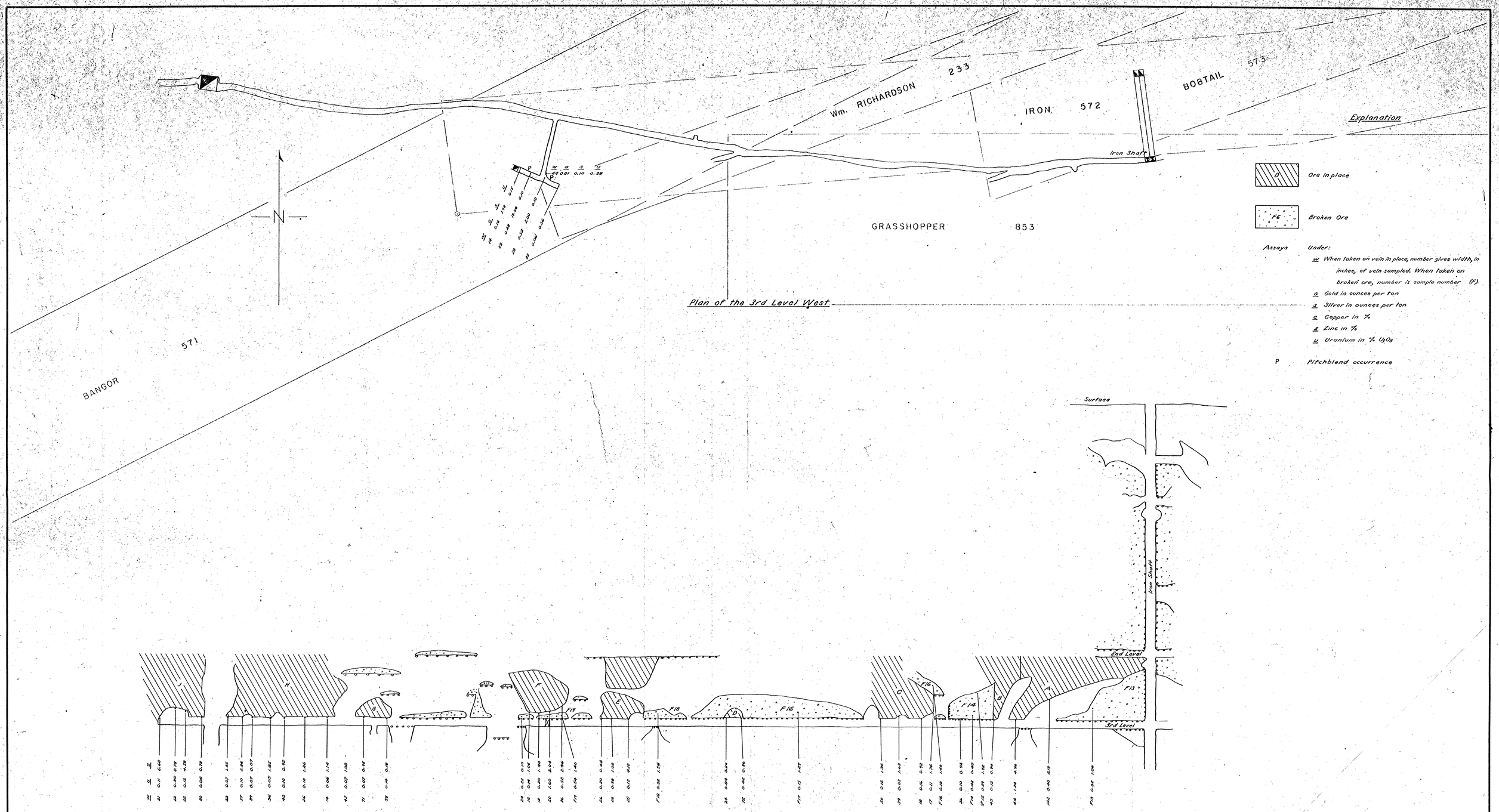
cb



By D. R. MacLaren January 1953.

FIGURE 2. PLAN SHOWING LEVEL WORKINGS AND PROPOSED EXPLORATION DRIFT, IRON MINE, GILPIN COUNTY, COLORADO.

40 0 40 80 FEET.

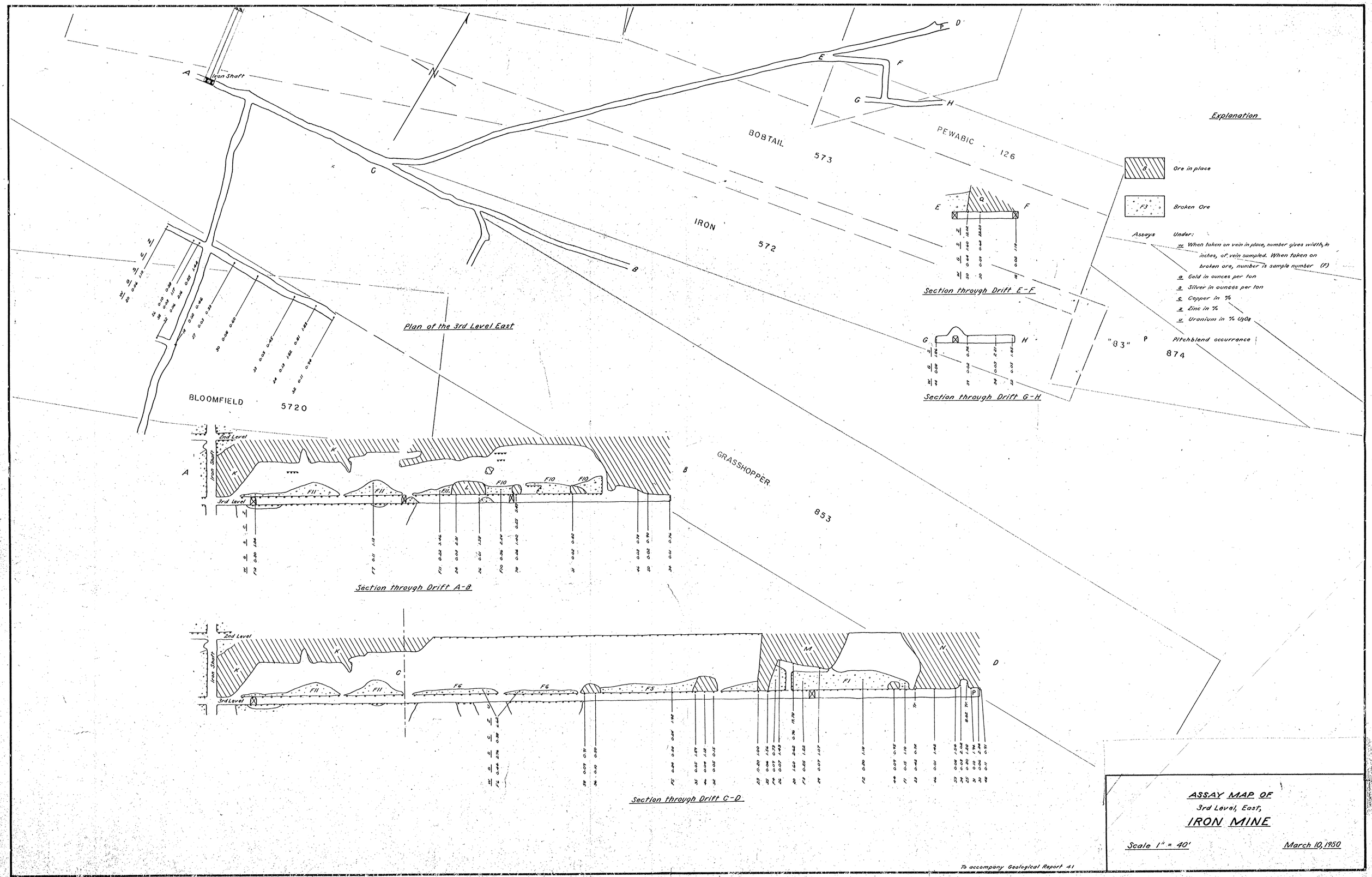


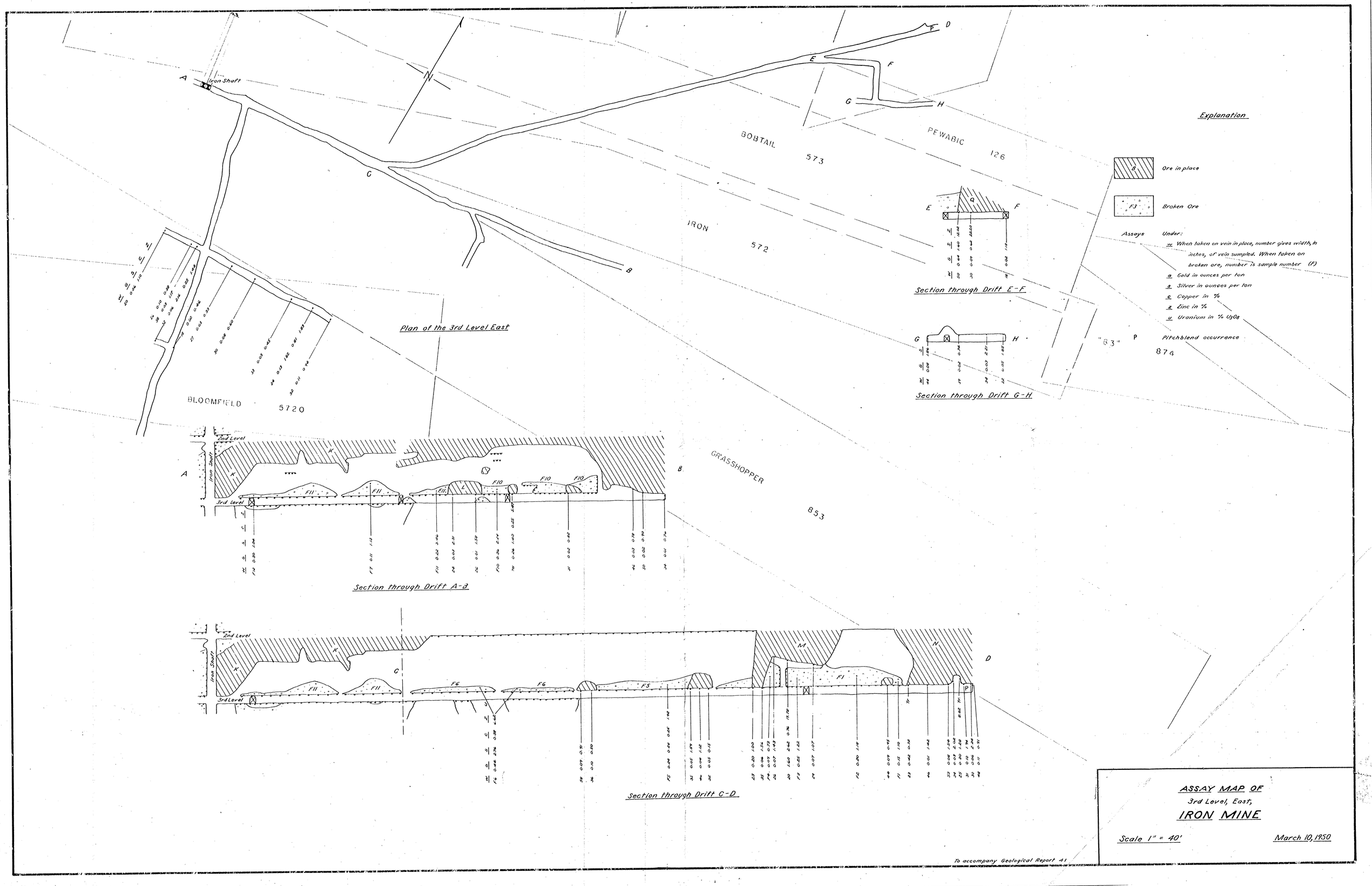
ASSAY MAP OF
3rd Level, West,
IRON MINE

Scale 1" = 40'

March 10, 1950

To accompany Geol. Rept 41


Iron Shaft
A
B
C
D
E
F
G
H
BOBTAIL
573
PEWABIC
126
IRON
572
BLOOMFIELD
5720
GRASSHOPPER
853
"83"
P
874
Plan of the 3rd Level East
Section through Drift E-F
Section through Drift G-H
Section through Drift A-B
Section through Drift C-D
2nd Level
3rd Level
Explanation
Ore in place
Broken Ore
Assays
Under:
w When taken on vein in place, number gives width, in inches, of vein sampled. When taken on broken ore, number is sample number (F)
a Gold in ounces per ton
s Silver in ounces per ton
c Copper in %
z Zinc in %
u Uranium in % U_3O_8
Pitchblend occurrence
ASSAY MAP OF
3rd Level, East,
IRON MINE
Scale 1" = 40'
March 10, 1950
To accompany Geological Report 41


Iron Shaft
A
B
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Section through Drift E-F
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2nd Level
3rd level
3rd Level
K
L
M
N
P
F11
F10
F6
F5
F1
Explanation
Ore in place
Broken Ore
Assays
Under:
w When taken on vein in place, number gives width, in inches, of vein sampled. When taken on broken ore, number is sample number (F)
a Gold in ounces per ton
s Silver in ounces per ton
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u Uranium in % U_3O_8
Pitchblend occurrence
ASSAY MAP OF
3rd Level, East,
IRON MINE
Scale 1" = 40'
March 10, 1950
To accompany Geological Report 41