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SUPPLEMENTAL REPORT

RE:

OMS-6185(Lead-Silver-Gold)
Olive and Lombardi
d.b.a. Jumbo Mining Corp.
Democrat, et al., Claims
Lemhi County, Idaho

Philip D. Shockey
Salmon, Idaho
May 31, 1962

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U. S. G. S.
SPOKANE, WASH.

SUMMARY

The Democrat, et al., claims are in Texas mining district(lead-silver), which has the largest and highest grade production of any district in Lemhi County, Idaho. Moreover, the Hilltop and Jumbo mines within the Democrat, et al., group have produced at least 11,000 tons of ore containing about 15 per cent lead and 14 ounces silver, together with less important but significant amounts of zinc, gold, and copper. Also, several closely associated properties have produced smaller tonnages of similar ore. Thus, it is established that the area to be explored is well mineralized. Reconnaissance geologic mapping on the surface and more detailed work underground show that these are replacement ore bodies, closely controlled both structurally and stratigraphically. Understanding of these controls and working knowledge of the broader geologic setting provide an advantageous basis for minerals exploration. Both surface and underground exploration are proposed. If geochemical(soil) sampling and bulldozer trenching have favorable results, then crosscutting and drifting will be employed to explore in depth. Estimated total cost of surface exploration is $5123.75, and subsequent underground exploration will cost $211,945.

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INTRODUCTORY LETTER

Salmon, Idaho
May 21, 1962

Mr. D. H. McLaren
Acting Field Officer, OMM
No. 157 Howard Street
Spokane 4, Washington

Dear Mr. McLaren:

This report has been prepared to supplement an Office of Minerals Exploration loan application submitted late in 1961 by Jumbo Mining Corporation of Salmon, Idaho. OME designation for this application is:

OME-6135(Lead-Silver-Gold)
Sims and Lombardi
d.b.a. Jumbo Mining Corp.
Bancroft, et al., Claims
Lemhi County, Idaho

Each item of information required with original application is newly considered in this report. Wherever changes were made, new data and proposals supersede original counterparts.

Jumbo Mining Corporation

J. Howard Sims
J. Howard Sims, Secy.-Treas.

ITEM 1. FINANCIAL ELIGIBILITY:

(a) Pages 3 and 5 of this supplement are copies of letters recently written to two different banking institutions to obtain a loan to explore the Demcarat, et al., claims. Pages 4 and 6 are refusal letters from these two institutions.

(b) Not applicable.

(c) Jumbo Mining Corporation will furnish its share of the exploration costs in: (1) cash, (2) personal services, and (3) operating equipment, materials, and supplies.

JUMBO MINING CORPORATION

Salmon, Idaho
May 21, 1962

Idaho First National Bank
Salmon Branch
Salmon, Idaho

Gentlemen:

Preliminary estimates based on current geologic study show that our Hilltop mine and adjoining properties(Texas Mining District, Lemhi County, Idaho) merit various kinds of exploration work totalling $100,000 in cost.

Enclosed is our current financial statement. Under what conditions and terms would you lend us half of the specified amount to complete the indicated exploration work?

Sincerely,

SS/ J. Howard Sims

Secy.-Treas.

SALMON OFFICE

The Idaho First National Bank

ESTABLISHED 1867

SALMON, IDAHO

May 22, 1962

Mr. J. Howard Sims
Secretary-Treasurer
Jumbo Mining Corporation
Salmon, Idaho

Dear Mr. Sims:

Thank you for your request for a loan in the amount of $50,000.00 for exploration work on your Hill Top Mine.

Our policy does not include loans for the purpose of exploration work in the field of mining.

If we can be of any other service to you, please do not hesitate to call upon us. Thank you for your cooperation.

Yours very truly,

Kenneth Howard
Assistant Manager

KH:bjm

JUMBO MINING CORPORATION

Salmon, Idaho
May 21, 1962

Custer County Bank
Challis, Idaho

Gentlemen:

Preliminary estimates based on current geologic study show that our Hilltop mine and adjoining properties(Texas Mining District, Lemhi County, Idaho) merit various kinds of exploration work totalling $100,000 in cost.

Enclosed is our current financial statement. Under what conditions and terms would you lend us half of the specified amount to complete the indicated exploration work?

Sincerely,

SS/ J. Howard Sims

Secy.-Treas.

SETH BURSTEDT, PRESIDENT
N. W. HANSEN, VICE PRESIDENT
OLIVER T. DAVIS, EXEC. VICE PRES.
ADRIAN BURSTEDT, CASHIER
MARY A. MEYERS, ASST. CASHIER

Custer County Bank

92 297

CAPITAL AND SURPLUS $150,000.00

Challis, Idaho

28 May 1962

J. Howard Sims, Sec-Treas
Jumbo Mining Corporation
Salmon, Idaho

Dear Mr. Sims,

In reply to your letter of May 21, 1962, and request for loan therein, we regret that we must decline your application.

We recognize the probable merit of your venture, but bank policy precludes the granting of loans for the purpose of mine operations.

Sincerely yours,

Oliver T. Davis
Executive Vice President

OTD:ag

ITEM 2. APPLICANT'S RIGHTS IN LAND:

(a) Jumbo Mining Corporation owns outright or holds under contract all of the land on which exploration work is proposed. A signed copy of the only ownership document lacking in the original application accompanies this supplement separately. There are no encumbrances on the land.

(b) The area of particular interest(Hilltop mine and environs) is in Texas mining district, Lemhi County, Idaho(Fig. 1). More specifically the land involved lies in the unsurveyed western part of Sec. 1 and the eastern part of Sec. 2, R.26E., T. 13. N., Boise Meridian. Five patented and five unpatented claims of the Democrat, et al., group are subject to exploration (Plate I and Fig. 15). These 10 claims and none of the others of the group would be liable to Government royalty and liens. Records in the Lemhi County Courthouse, Salmon, Idaho, list the pertinent claims as shown in Table 1.

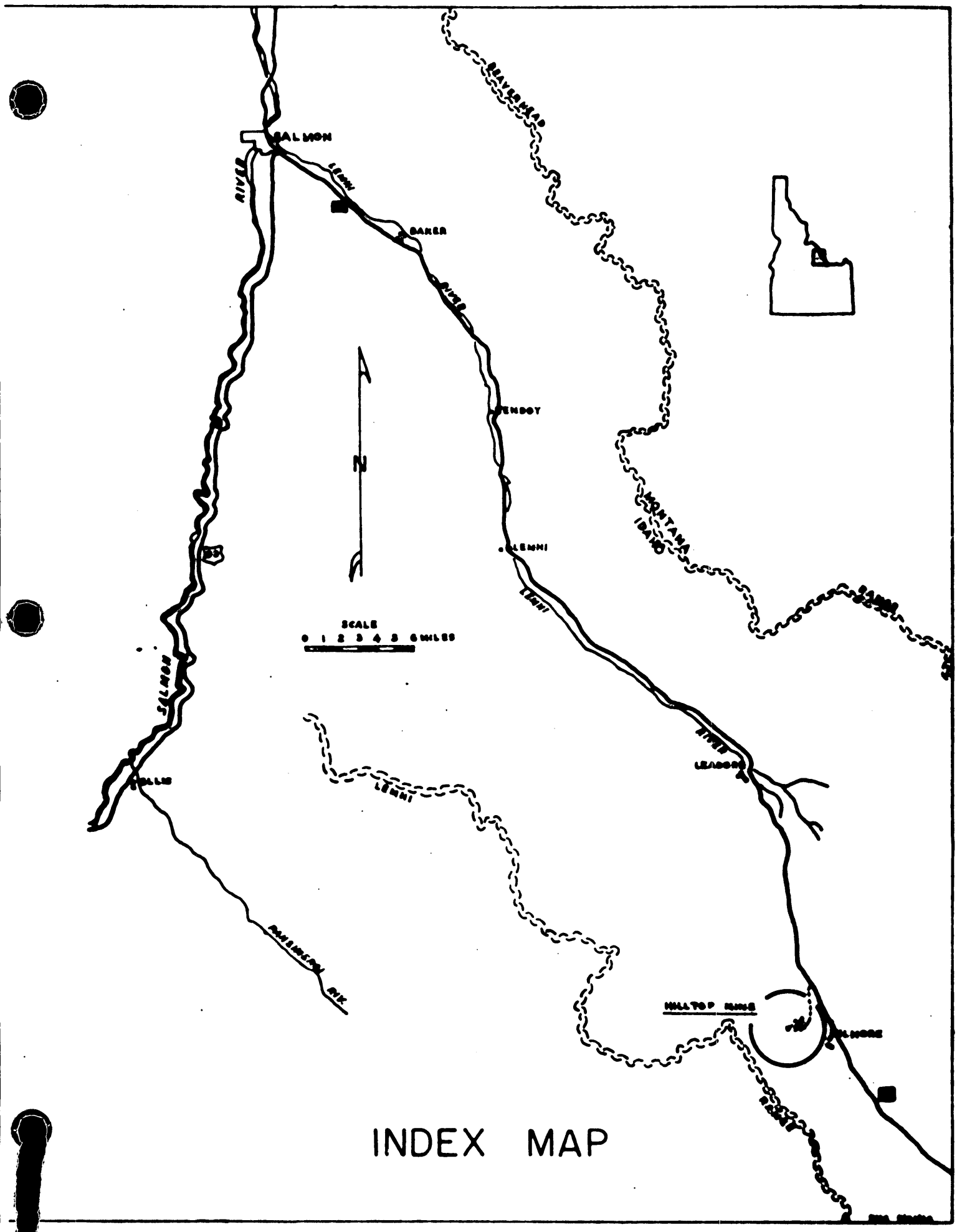
TABLE 1. PERTINENT CLAIMS BY BOOK AND PAGE NUMBER

PATENTED CLAIMS	SURVEY NO.	BOOK NO.	PAGE NO.
Alex Stevens No. 2	3198	30	78
Fairview	3048	26 of Patents	237
Glendale	3048	"	"
Jumbo	?	"	"
McKinley	?	"	"

UNPATENTED CLAIMS	BOOK NO.	PAGE NO.
Hilltop No. 1	3	39
Hilltop No. 2	3	40
Hilltop No. 3	3	41
Democrat No. 4	10	363
Bail	10	364

Parcels of this land in the past have been called by individual claim names. The Hilltop mine has been the site of more recent work and production, and "Hilltop" now is the name most

FIGURE 1



INDEX MAP

commonly used to locate this area. However, because the BLM currently has established the name "Democrat, et al.," that name will be used henceforth.

(c) Paragraph 4, page 5 of the separately accompanying ownership document mentioned in ITEM 2 (c) states:

> "It is further mutually understood and agreed that should the Lessees desire to obtain an exploration project contract from the Bureau Mineral Exploration Administration of the U.S. Department of Interior, the Lessors will sign the owners consent thereto."

Thus, there can be no doubt that BLM lien or subordination forms will be signed, and five executed copies will be submitted as soon as possible. The applicant hopes that processing of the application will not be delayed until this detail is accomplished.

ITEM 3. <u>PHYSICAL DESCRIPTION</u>:

(a) High grade lead-silver lodes of the Tonopah district were discovered in the early 1860's(Ransome, 1913, p. 90). Numerous pits, trenches, adits, shafts, and dumps dating from early days to the present attest the miners' interest and efforts in the district. The Democrat, et al., area is marked by several score such workings, the major ones of which are shown and described in Plate I. Of these, the Hilltop and Jumbo workings are most extensive.

The Hilltop mine is opened by an unexamined surface adit and a shaft. The shaft is 6 feet by 12 feet in cross section and 310 feet deep on a 60° to 70° east-southeasterly incline. The collar is at an elevation of 6360 feet. And at intervals ranging from 75 feet to 95 feet five successively deeper levels have been driven generally northwesterly and southeasterly from the shaft. Extent of workings increases with depth to total

3320 feet as shown in Table 2.

TABLE 2. EXTENT OF HILLTOP MINE WORKINGS BY LEVEL

LEVEL	FEET OF X-CUT AND DRIFT
100	290
200	540
300	790
400	890
500	810
Total	3320 feet

Stopes on two Hilltop ore shoots are continuous from the 400 and 500 Levels to and above the 100 Level of the mine. Other over-and under-hand stopes have been excavated; the deepest winze reaches about 70 feet below the 500 Level. Virtually all of this work was done between 1943 and 1961. Figures 4 thru 12 show the Hilltop mine much more clearly than words can tell.

Principal Jumbo workings are an 850 foot drift(?), which is partially caved; and a 240 foot incline-stope, which was intersected some 300 feet from the drift portal(Fig. 13).

The only production facilities on the Democrat, et al., property are at the Hilltop mine. These include: (1) an adequate but dry camp, (2) a surface plant consisting of a hoist-house, headframe with ore storage and dump facilities, 10,000 gallon water tank, and portable compressor, and (3) an inefficient, incompletely equipped mine plant-requiring hand mucking and tramming-serviced by a low capacity 15-cubic-foot skip.

(b) In 1960 the Lombardi family of Anaconda, Montana, renovated the Hilltop surface plant and shaft in preparation for underground work. By late 1961 they had drifted 100 feet northwesterly on the 300 Level of the mine, crosscut 100 feet easterly from the 500 Level shaft station, and drifted, crosscut,

sunk, long-holed, and mined less extensively elsewhere on the 500 Level. The Lombardis now own 45% of Jumbo Mining Corporation, the present applicant.

(c) Available records show that from 1943 to 1960 the Hilltop mine shipped 8921 tons of crude ore averaging 0.20 oz. Au, 13.83 oz. Ag, 0.34% Cu, 15.15% Pb, and 0.89% Zn. And in 1961 two truck loads of crude ore totalling 38 tons averaged 1.06 oz. Au, 22.93 oz. Ag, 0.69% Cu, 22.8% Pb, and 12.88% Zn.[1] Also, the Alex Stevens property, which subsequently became the Hilltop mine, produced 93 tons of similar ore in 1918 and 1921.(See USBM production statistics in Appendix) How much waste was hand-sorted before shipment is problematical. But an estimate of 10,500 tons of mine-run crude seems reasonable for total Hilltop production.

Umpleby(1913, p.103) states that "about 400 tons of ore running 37 per cent lead, 48 ounces in silver, and $3.50 in gold" and had been shipped from the Jumbo mine by 1910. And Government production figures show that two crude ore shipments in 1910 and 1916 totalled 36 tons averaging 0.66 oz. Au, 23.21 oz. Ag, 0.43% Cu, and 17.55% Pb. Less quantitative and reliable oral communications attribute more substantial production to the Jumbo mine during the late 1800's. And the workings do indicate production considerably in excess of the 400-odd tons of record.

Other properties in the area of immediate interest have produced from a few to a few hundred tons of high grade lead-silver ore. Records of this production are not available.

1. Pertinent smelter settlement sheets available upon request.

because: (1) some of the ore probably was shipped before Government record-keeping started in 1901, (2) the applicant does not have access to all records, and (3) some of the ore was stockpiled at mines and never shipped. Noteworthy examples of such other properties are the diggings circa 7000E.-7300E., 7500N.-8400E., 8000N.-7600E. in Plate I.

(d) By strict defination there is little or no ore remaining in the Hilltop mine. However, this not to say that strongly mettallized rock is absent from present workings and surrounding terrane. On the contrary, 24 channel samples cut across readily accessible remaining better parts of the Hilltop vein had the following average values(see also Figs. 4-8 and sample data in Appendix):

Avg. Width.	Wtd. Avg. Assay		
1.27 feet	21.0 oz Ag/T	21.50% Pb	0.10% Zn

Based on the 1961 crude-ore shipment(p.11), which had comparable Ag-Pb-Zn values, these channel samples probably also averaged about 1 oz. Au per ton. Thus, better mained parts of the Hilltop vein have a gross per ton market value of about $100. But narrowness of the vein, and especially inefficiency and low capacity of the plant(p. 10), together with freight and smelter deductions leave no margin for profit in mining. This conclusion is proved by the facts that: (1) the principal operator and subsequent "lessees" left the rock in the mine, and (2) it has not been possible to interest new "lessees". Consequently, the remaining high grade vein segments can not be considered ore, even though indicated and inferred reserves of identical material total several thousand tons. If the lower

levels of this mine were opened by a surface adit rather than a shaft, then the rock in question and leaner counterparts all probably would be ore.

A multiple-vein, wall-rock-controlled-shoot hypothesis of origin for the Hilltop and associated lodes is described and rather clearly demonstrated in Item 3 (e) of this supplement (p.13-16). On the basis of this hypothesis, inferred reserves in the area to be explored total several tens of thousands of tons. And indications are that all of this ore is similar in quality and character to that mined and remaining in the Hilltop and adjacent properties(p.11). If the bulk of this significant ore reserve is to be recovered, however, exploitation must be through a surface adit rather than a shaft. This is exemplified at the Hilltop mine and dictated by the distribution and character of the ore bodies: narrowness is to be expected in depth(p.17 and 21).

(e) Areal geologic maps of the Tonopah district have not been published if they exist at all; thus there is no broad framework into which local data can be fitted. Following statements are based on spotty reconnaissance mapping in sparsely cropping terrane and on more detailed, but not thorough, underground mapping. Nevertheless, certain generalizations seem valid, and some details are clear.

Country rock in the Belmont, et al., area is thin bedded to massive, light to dark gray dolomite and limestone of Paleozoic age. Dolomite is more favorable host rock for ore deposits than limestone, and particular sequences of dolomite beds are more favorable than others that appear to be identical.

A fine grained white quartzite(Ordivician, Kinnikinic?)rims the carbonate strata on the west and north and delimits these borders of the area to be explored(see chevron contours northwestern portion of Plate I).

Northerly strikes are most common in these sedimentary rocks and Umpleby(1913, p. 92) found similar structure a few miles to the south. That the Paleozoic rocks are at least moderately deformed is shown by: (1) a large recumbent anticlinal fold- probably an overturned synclinal limb - exposed in the Hilltop workings(Figs. 10 and 12), (2) contorted dips along the road to the mine and elsewhere(Plate I), and (3) wrapping of the white quartzite outcrop. Tenuous broad indications are that the area to be explored lies on the overturned west limb toward the north end of a south plunging syncline, whose axis trends northerly about through the center of Plate I. Common types of joints are present, and a set of dip joints apparently provided major channels for mineralizing solutions. These joints strike westerly and dip steeply to the south. Bedding plane and other faults are present, but nowhere in the district has faulting seriously hindered mining (Umpleby, 1913, p.95). Two post-mineral faults are important in the Hilltop mine. The Texas fault, with 1 foot to 10 feet of dry, yellow-orange gouge, strikes northerly and dips westerly at steep to moderate angles(Figs. 4-12). This normal fault displaced the No.2 Ore Shoot 155 feet and rotated it as shown in Figure 12. The Idaho fault is exposed only on the east end of the 500 Level, and its nature and extent are not established, except that it appears to be an important fault(Figs.8, 10, and 12).

Intrusive igneous rocks are abundant. The Democrat stock, which with apophyses crops out over at least 20 acres and probably a much greater area, is the largest and coarsest grained igneous mass(Plate I, circa 9000N.-10000S.). This stock is medium to coarse grained, somewhat porphyritic, light-reddish-orange weathering granodiorite(field terminology)with differentiated border zones. The Democrat stock produced enough heat to marmarize adjacent carbonate rocks, and skarn is abundant locally. Numerous prospect pits and a few more extensive workings mark the borders of this stock, attesting the presence of contact metasomatic "ore" deposits: the only ones in the area under discussion. Of these contact deposits, the Democrat and Canadian lead-silver lodes were of minor commercial significance(See Fig. 14 and USBM statistics in Appendix). These lead-silver lodes are mineralogically similar and probably related closely in genesis to the larger replacement bodies further west. Otherwise, the contact deposits hardly merit further attention.

Numerous fine to medium grained, dark-gray quartz diorite and related dikes up to several hundred feet wide strike northeasterly through the carbonate strata(Plate I). In contrast to the plutonic Democrat stock, these hypabyssal rocks did not produce marked contact effects, and they do not appear to be of more than remote genetic significance in formation of nearby ore deposits. In fact, Umpleby(1913, p.94) states that two miles to the south near Gilmore similar dikes "were intruded in part at least after mineralization, as shown by an exposure in the upper workings of the Letset Cut mine, where one of them cuts across the ore".

A brief hypothetical geologic history pertinent to this discussion is: (1) major deformation of Paleozoic strata, (2) intrusion of the Dancerat stock, (3) lead-silver mineralization, and (4) intrusion of quartz diorite dikes. These events presumably occurred over a long interval during Late Mesozoic and/or Early Tertiary time.

All of the ore bodies of current interest are replacement veins in carbonate rock. As previously mentioned, a set of dip joints striking westerly and dipping steeply to the south appears to have provided major channels for mineralizing solutions. Mineralized breccia(brown and white breccia of Figures 4-8) and local soft brown gouge show that there was shearing along these ore-bearing joints. The metasoma with delicate precision replaced certain more hospitable sequences of dolomitic strata while bypassing similar rock along the channel way. Most of the resulting ore shoots lie across bedding(i.e. dip joints cross bedding), but locally individual dolomite beds have been replaced for 50 feet along strike away from the main shoot (Figs. 5, 10, and 12). Smaller pods and shoots of ore were deposited under less clearly controlled conditions of replacement.

In the Hilltop mine ore vein has been explored about 700 feet along strike and 600 feet down dip. Two large ore shoots and several smaller ones occur along the vein. The No.1 Ore Shoot is crescent-shaped in longitudinal section, following in classic style through each level of the mine a particular sequence of thin bedded gray-brown dolomite(Figs. 10 and 12). This ore shoot is canoe-shaped in plan view, with minimum

length of 50 feet and maximum beam of 6 feet. The No.2 Ore Shoot is similar, but smaller, and it formed in more massive dolomite, so that bed-following character is mostly inferred. The Texas fault cuts the No.2 Ore Shoot into two roughly equal parts(Figs. 4-12). It appears that both the No.1 and No.2 Ore Shoots are thickest and shortest where dip of the favorable host rock is steepest. As bedding flattens on the 400 and 500 Levels of the mine, ore shoots become longer and narrower in plan view(Figs. 4-12). Presumably this is because the gatecome without diminishing in quality or quantity was spread more thinly through a greater horizontal cross section of favorable beds(Figs. 10 and 12). Ore controls and other geologic features in the Jumbo workings(Fig. 13) are virtually identical to those in the Hilltop mine. And it is probable that these same controls worked wherever ore deposits formed in the area to be explored.

Typical primary ore consists of replacement pods of argentiferous galena and sphalerite together with very minor pyrite and chalcopyrite in a gangue of spotty-looking milky quartz and massive jasperoidal hematite. Oxidation extends with decreasing but still obvious intensity to the lowest levels of the Hilltop mine. Chief oxide minerals are cerusite, anglesite, limonite, smithsonite, manganese oxide stain, and malachite. All of this ore typically is high grade. Lead and silver are the principal values, commonly occurring in a ratio of 1 oz. Ag: 1% Pb(See XXXX 3 (c), p. 11-12). Figures 2 and 3 show roughly the following value changes in depth:

Silver	Lead	Zinc	S/F
Possible slight decrease	Possible slight increase	Strong increase	Apparently unchanged

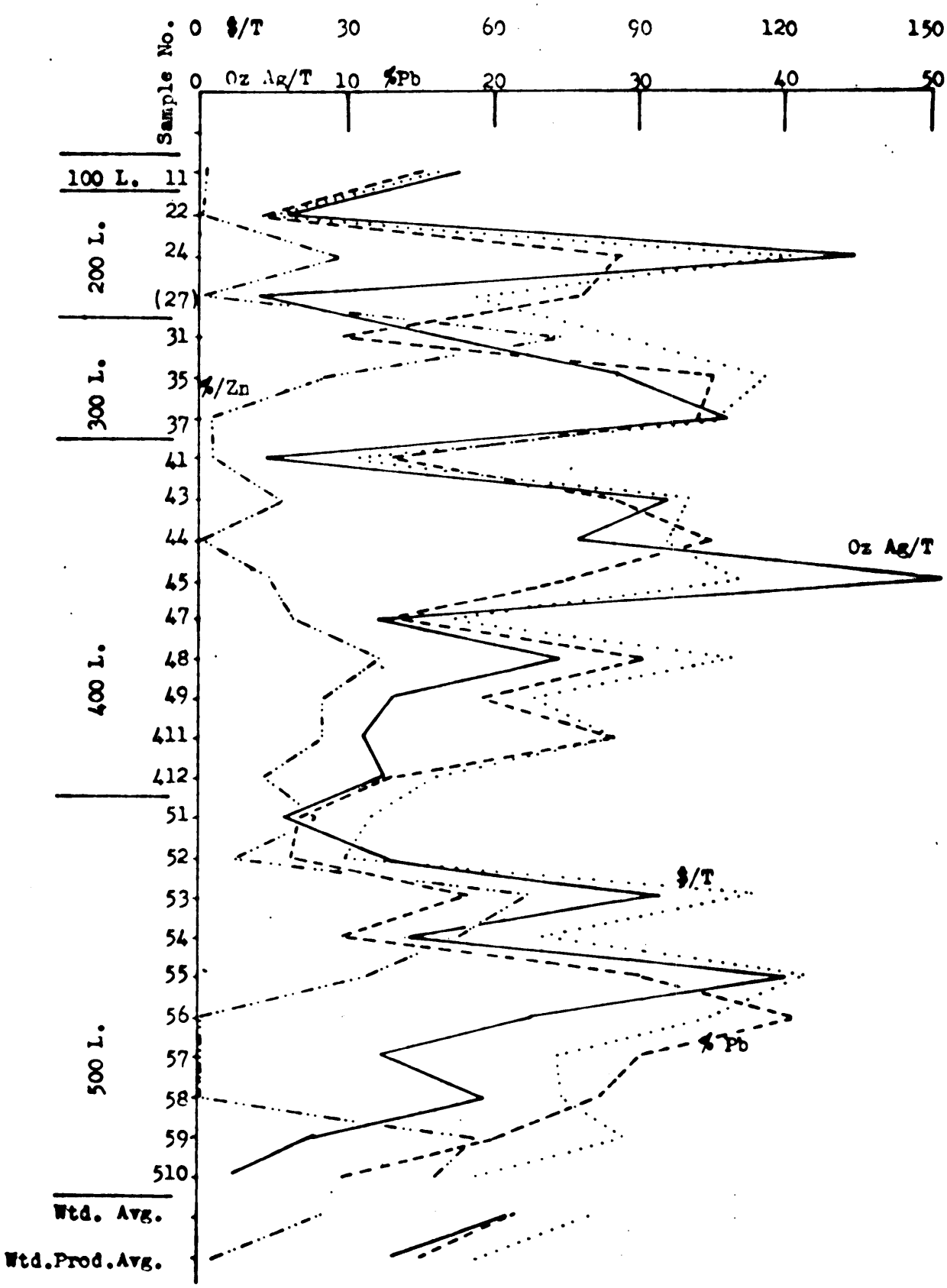
More than anything else these changes reflect decreasing oxidation with depth. The Jumbo workings, which have the deepest(elevation-wise) and least oxidized ore exposures in the area to be explored, show that there is no reason to suspect unfavorable value changes within the depth range under consideration(p.12 and Plate I).

Silicification is the most readily recognizable wall rock alteration in the Hilltop mine.

(f) According to Ross and Forrester(1958, p.46) "the Texas district . . . is by far the most productive in Lemhi County". Moreover, Government records(personal file) show that 54 mines in the district averaged the highest grade crude-ore production in the County. Thus, it is established that the area to be explored is in a well-mineralized district.

At least three veins(Hilltop, Jumbo, and 7800N.-7300E., Plate I) bearing high grade lead-silver ore shoots crop out in the area of interest. Probably others lie hidden beneath omnipresent soil cover. Foregoing facts and inferences show that principal ore controls and other geologic features of individual lodes are very similar throughout this terrane. Mineralogy and character of the ore, gangue, and wall rock alteration indicate that these are mesothermal deposits, which should have considerable extent both laterally and in depth. This supposition is verified by the proven extent of the Hilltop and other veins and ore shoots in the immediate vicinity

Figure 2



Oz Ag, % Pb, % Zn, $/T Variation in Depth

as well as elsewhere in the district(Emplety, 1943, p.89-109). Presence of high grade typical ore in the deep(elevation-wise) Jumbo workings(p. 11 and 17) tends to prove that strong metallization extends to and below the depth range of proposed exploration.

It is apparent that these deposits are so situated on the flank of a syncline(p. 14) that bedding can be expected to flatten in depth. Principal ore controls are such that plan view lengthening and thinning of ore shoots accompanies flattening of dip angles(p. 17). Otherwise, quantity and quality of ore is undiminished, and the only ensuing consideration is for more efficient means to mine narrower ore bodies.

Intelligent exploration hardly can fail to increase ore reserves of the Democrat, et al., group.

(g) Three complete copies of this supplement have been submitted. There need not be returned.

ITEM 4. ACCESSIBILITY OF PROPERTY:

(a) GWE representatives who may examine the Lemaerat, et al., area will be met by:

J. Howard Sims
Box 686
Salmon, Idaho
Phone: Skyline 6-2277

Arthur, Clemens or Mercedes Lombardi
107 N. Hickory
Anaconda, Montana
Phone: Logan 3-5473

Beginning at Leadore, Idaho, the route to the Lemaerat, et al., is: 13.5 miles south on highway Idaho 28, then over good to fair dirt roads 0.3 miles southwest on Dunkin lane to an intersection near an old building, then 2 miles due south to a west-branching T-intersection(Plate I, extreme eastern edge), which leads to various parts of the area of interest, all lying within a few miles of the T-intersection(See Fig. 1 and Plate I for details). Most parts of the property pertinent to this application are accessible by conventional or 4-wheel-drive vehicle; visits to a few sites require short and locally steep foot traverses. Elevations range from 7000 feet to 8500 feet, and deep snow commonly blankets much of the area from about the first of the year until late April or early May.

(b) The most accessible shipping point is Roberts, Idaho, 90 miles southeast via highways Idaho 28 and Interstate 91. Salmon City about 63 miles northeast is the nearest principal supply point; however, fuel and groceries are available at Leadore, only 20 miles from the project area.

ITEM 5. EXPLORATION PLAN:

(a) Both surface and underground exploration projects are proposed.

Underground exploration will be guided by results of the surface work. Consequently, surface projects must be completed first.

SURFACE EXPLORATION

Phase 1. Geochemical Sampling:

The applicant proposes to lay out from the northeast patent corner of Alex Stevens No.2 claim ~~on~~ the basic soil sample grid shown in Figure 15. This grid is bounded on the west by outcrops of white quartzite and on the remaining three sides by claim lines. The grid consists of 11 segmented fences lettered A thru L. These fence lines range from 1100 feet to 3650 feet in length, and they strike N. 43° E., crossing on 200-foot centers the trend of the Hilltop, Jumbo, and other known veins(See Plate I). At intervals of 50 feet along each fence line, soil augers will be used to extract samples from three feet below surface. These samples, appropriately lettered and numbered according to the scheme indicated in Figure 15, will be analyzed for lead content in parts per million. In the orientation phase of this work, zinc and silver analyses will be made to determine whether these elements might be better guides to ore than lead. Analyses will be made in the field as prescribed by Lakin, Almond, and Ward(1952).[1] And duplicate samples will be sacked and stored for check and experimental purposes. Results from samples on the basic grid will be plotted and interpreted. Subsequent closer spaced sampling will be employed to better define areas of interest brought to light

1. Efforts to obtain this publication and learn details of the specified procedure have been unsuccessful. Nevertheless, experience with similar methods indicates that no special difficulties are to be expected. Necessary information will be acquired in time to execute the proposed work.

by the original sampling. Probably some 2000 soil samples will be required to achieve satisfactory results.

Phase 2. Bulldozer Trenching:

The strongest discrete anomalies outlined by soil sampling will merit further exploration. Bulldozer trenching will be an excellent means of achieving this objective over such unleached ore deposits as are being sought. Therefore, the applicant proposes that 100 hours of D-8(or equivalent) bulldozer trenching be reserved to follow-up the soil-sampling program.

UNDERGROUND EXPLORATION

If results of surface exploration are favorable, then the applicant proposes to drive a 2500-foot crosscut from near the portal of the old Jumbo drift(Plate I, near 7400N.-7600E.) approximately S.51° W. to the Hilltop vein about as shown in Plate I. Of course, portal location and direction of this crosscut will be changed to better fit geochemical findings, if that proves desirable. The new crosscut will be the 700 Level of the Hilltop mine, and it will intersect the Hilltop vein approximately 270 feet below the present 500 level and 200 feet below the deepest Hilltop winze. The Jumbo vein and the vein circa 7000N.-7300E. in Plate I together with others hopefully discovered by soil sampling should be encountered in the 700 Level crosscut beginning a few hundred feet from the portal(Plate I). Brown and white breccia and soft brown gouge will identify veins where ore is absent(See p. 16, Figs. 4-8 and 19).

After the crosscut is completed, the applicant proposes

Fig 15
removed for
prints.
[illegible]

to drift 150: feet on the better showings exposed. Inasmuch as one can not predict exactly what the 700 level crosscut will find, it seems best to let whereabouts of individual 700 level drifts be a discretionary matter subsequently to be decided between GMI representatives and the applicant.

All of the proposed 700 Level adit will be 5 feet by 7 feet in the clear. Timber support probably will be required for about 200 feet from the portal, and several large faults requiring timber can be expected further inside. ?

Before underground work begins on the 700 level, a portal site will have to be bulldozed, to bedrock if reasonably possible, a compressor house will have to be built, and a 500 gallon water storage tank will have to be installed(Tunnel workings are dry for 650 feet into the ore hillside and there is virtually no water in the Hilltop mine).

(b) No new access roads are required, but about 1000 feet of old road leading to the new portal site will have to be bulldozed clear of slough and widened and smoothed in places(See Plate I from near the 650E.-1250N. to the proposed portal site).

(c) If an GMI contract is executed, work on this project will start immediately. Normal rates of progress and completion times for each type of exploration work are shown in Table 3. Accordingly, geochemical sampling will require 6 weeks, bulldozer trenching 3.1 weeks, and crosscutting and drifting 112 weeks. Because the exploration projects occur in sequence, these completion times are additive, totalling 2.33 years. Barring unforeseen difficulties, a total time of about 2.5 years from the date of contract signing is reasonable for completion of all proposed exploration work.

TABLE 3. - MANPOWER DATA ON PRELIMINARY AND ORDINARY TIME FOR EACH TYPE OF PRELIMINARY WORK

TYPE OF WORK	SET-UP TIME-DAYS(1) (Obtain equipment, supplies, and personnel; move-in and complete preliminary work)	DAILY RATE	TOTAL JOB	TOTAL DAYS (2)	TOTAL DAYS (1) plus (2)	WORK WEEKS (5 day)	YEARS (52 weeks)
Surface							
Geochemical Sampling	10	100 samples/day	2000 samples	20	30	6	0.12
Bulldozer Trenching	3	8 hrs.	100 hrs.	12.5	15.5	3.1	0.06
Underground	60	2 shifts 4 ft. per shift or 8 ft/day	4000 ft.	500	560	112	2.15
				Total 60	5.5 days	121.1 weeks	2.33 yrs.

ITEM 6. [illegible]:

Jumbo Mining Corporation is a new organization. Principals and officers in the Corporation all are successful businessmen experienced in hard-rock mining. J. Howard Pine, Secretary-Treasurer and General Manager, has mined and been involved successfully in mining ventures for 40 years. Affluence of the last two generations of Pine's is based largely on income from family-owned mining properties, the best known of which was the Blackbird cobalt-copper mine, Blackbird district, Lemhi County, Idaho. Needless to say, Mr. Pine is qualified to manage a small mining venture. The Lundquist family, which provides the President and Vice-President of the Corporation, became actively interested mining several years ago. Their varied experience at the Hilltop mine(p.11) will be of considerable aid in execution of the proposed projects. And their proven ability to manage a large, successful business in Anaconda speaks well for their management of outside interests. All of these people recognize the need for and hire qualified technical help to answer questions and direct work outside the sphere of their own experience. Thus, it appears that Jumbo Mining Corporation has all of the qualifications required to complete the proposed work successfully.

ITEM 7. ESTIMATE OF COSTS:

SURFACE EXPLORATION

Phase 1. Geochemical Sampling (2000 soil samples)

(a) Independent Contracts	Unit Cost	Quantity	Total Cost	Cost/Sample
Commercial analyses for check and experimental purposes	1.50	200	$300.00	$0.15

(b) Personal Services (all available locally)	Rate/Day	Days Required	Total Cost	Cost/Sample
Geologist	$35.00	30	$1050.00	$0.52
2 Assistants	20.00/man	20	800.00	0.40
			$1850.00	$0.92

(c) Operating Materials and Supplies	Unit Cost	Quantity	Total Cost	Cost/Sample
300-foot chain	$50.00	1	$ 50.00	$0.03
Stakes and pickets	0.05	2000	100.00	0.05
Soil augers	27.00	2	54.00	0.03
Shovels	6.00	2	12.00	0.01
Picks	6.00	2	12.00	0.01
Axes	6.00	2	12.00	0.01
Sample bags-plastic	0.03	2000	60.00	0.03
Sample storage boxes	0.50	40	20.00	0.01
Sampling apparatus and reagents	various [6]	various [6]	200.00	0.10
Office supplies	"	"	10.00	0.01
			$520.00	$0.29

[6] See footnote page 34

(d) Operating Equipment	Cost/Day	Days Required	Total Cost	Cost/Sample
Jeep 4-wheel drive station wagon	$10.00	25	$250.00	$0.13
Transit	3.00	20	60.00	0.03
			$310.00	$0.16

(e) Initial Rehabilitation and Repairs

None

(f) New Buildings, Fixtures, Installations

None

(g) Miscellaneous	Unit Cost	Quantity	Total Cost	Cost/Sample
Taxes and Insurance	10% of payroll		$165.00	$0.09
Map reproductions	$0.50	10	5.00	0.01
Postage(mostly sending samples out for commercial analysis)	various	various	25.00	0.01
Telephone and Telegraph-direct project	"	"	25.00	0.01
Travel-directly related to project	"	"	100.00	0.05
			$320.00	$0.17

Phase 1. Total: 2000 soil samples $3330.00($1.66/sample)

Phase 2. Bulldozer Trenching (100 hrs. D-6 or equivalent tractor)

(a) Independent Contracts	Unit Cost	Quantity	Total Cost
D-6 or equivalent tractor	$18.00/hr	100 hrs.	$1800.00
Assays of samples taken in trenches Pb,Ag,Zn,Au	7.00 @	50	350.00
			$2150.00

(b) Personal services (available locally)	Rate/Day	Days Required	Total Cost
Geologist	$35.00	12.5	$ 437.00

(c) Operating Materials and Supplies	Unit Cost	Quantity	Total Cost
Sample sacks, canvas	$ 0.25	50	$ 12.50
Office supplies	various	various	10.00
			$ 22.50

(d) Operating Equipment	Cost/Day	Days Required	Total Cost
Jeep 4-wheel drive station wagon	$10.00	12.5	$125.00

(e) Initial Rehabilitation and Repairs

None

(f) New Buildings, Fixtures, Installations

None

(c) Miscellaneous	Unit Cost	Quantity	Total Cost
Taxes and Insurance	10% of payroll		$49.75
Map Reproductions	$0.50	10	5.00
Postage(mostly sending samples out for assay)	various	various	$10.00
			$58.75

Phase 2. Total(100 hrs. bulldozer trenching $2792.75

GRAND TOTAL SURFACE EXPLORATION $6123.75

UNDERGROUND EXPLORATION
(4000 ft. crosscutting and drifting)

(a) Independent Contracts	Unit Cost	Quantity	Total Cost	Cost/Foot
D-8 or equivalent bulldozer-improve 1000 feet existing road, excavate portal site, and prepare dump truck area	$18.00/hr	50 hrs.	$900.00	$0.22
Assays, Pb,Ag,Zn,Au	7.00 ea	100	700.00	0.17
			$1600.00	$0.39

(b) Personnel Services (all available locally)	Rate/Day	Days Required	Total Cost	Cost/Foot
Geologist-engineer	$35.00	560	$19,600.00	$4.90
Professional surveyor	35.00	3	105.00	0.03
4 Miners	25.00/man	510	51,000.00	12.75
2 Surface men	20.00/man	500	20,000.00	5.00
Rock and Timekeeper	18.00	560	10,080.00	2.52
			$100,785.00	$25.20

(c) Operating Materials and Supplies	Unit Cost	Quantity	Total Cost	Cost/Foot
Fuel and lube	$3.00/ft	4000 ft	$12,000.00	[illegible]
Track-25 lb rail	5.50/ft	4200 ft (incl dump trk.)	23,100.00	5.78
Fish plates	1.00 pr	210 pr	210.00	0.05
Ties	0.20 ea	1400	280.00	0.07
Track spikes	0.10 ea	3000	300.00	0.08
2" air line	0.50/ft	4000 ft	2,000.00	0.50
Air hose	0.90/ft	300 ft	270.00	0.07
3/4" water line	0.30/ft	4000 ft	1,200.00	0.30
12" vent line	1.00/ft	3700 ft	3,700.00	0.93
Bits	0.25/ft	4000 ft	1,000.00	0.25
Steel	0.25/ft	4000 ft	1,000.00	0.25
Powder	1.00/ft	4000 ft	4,000.00	1.00
Fuse	0.25/ft	4000 ft.	1,000.00	0.25
Caps	0.25/ft	4000 ft.	1,000.00	0.25
Connectors	0.25/ft	4000 ft	1,000.00	0.25
Spitter cord	0.15/ft	4000 ft	600.00	0.15
Timber and lagging	2.50/ft	400 ft	1,000.00	0.25
Wedges	0.05 ea	800 ft	40.00	0.01
Spikes and nails	0.01/ft	4000 ft	40.00	0.01
Hand and shop tools	various	various	400.00	0.10
Cap lamps and chargers	50.00 set	6	300.00	0.08
First aid equipment	various	various	200.00	0.05
Sample bags(canvas)	0.25	100	250.00	0.06
Office supplies	various	various	100.00	0.03
			$54,590.00	$13.77

Maximum $2.00/ft

(d) Operating Equipment (all to be acquired through rental-purchase)	Quantity	Total Cost	Cost/Foot
Jeep 4-wheel drive station wagon	1	$3,200.00	$0.95
Service truck-4 wheel drive 6x6	1	6,000.00	1.50
310 c.f.m. portable air compressor	1	10,000.00	2.50
Receiver tank-appx. 100 cu ft cap	1	500.00	0.13

(d) Operating Equipment - cont'd.	Quantity	Total Cost	Cost/Foot
Receiver tank -appr. 10 cu ft. cap	1	$ 50.00	$0.01
Water Tank-100# fal cap.	1	500.00	0.13
Hoisting machine-Sinco 12B	1	4,000.00	1.00
Electric tramper 1.5#, Ranche 18" gague complete w/charging equipment	1	5,000.00	1.25
Diesel-electric plant, 10kw	1	3,000.00	0.75
Mine cars, 18" gague 27 cu ft. side dump	6	600.00	0.15
Rock drills, Atlas-Copco, Lion	2	3,000.00	0.75
Air vent fan and motor, surface	1	400.00	0.10
Air vent fan and motor, underground	1	400.00	0.10
Chain-saw, Homelite Zip	1	250.00	0.06
		$37,500.00	$9.38

Depreciation $625/month
100'/month

$3.12 Fwy

(e) Initial Rehabilitation and Repairs

None

(f) New Buildings, Fixtures, Installations	Size	Quantity	Total Cost	Cost/Foot
Compressor - change house w/benches and oil stove	16'x20'	1	$ 800.00	$0.20
Install receiver tank	100 cu ft.	1	100.00	0.03
Install water tank	1000 gal	1	100.00	0.03
			$1,000.00	$0.26

(g) Miscellaneous	Unit Cost	Quantity	Total Cost	Cost/Foot
Repair operating equipment	15% of value		$5,625.00	$1.41
Taxes and Insurance	10% of payroll		10,000.00	2.50
Map reproductions	0.50	50	25.00	0.01
Postage(mostly sending samples)	various	various	20.00	0.01
Telephone and telegraph(direct project)	"	"	150.00	0.04
Travel-directly related to project	"	"	250.00	0.06
			$16,070.00	$4.03

Underground Exploration-Total 4000 ft. crosscutting and drifting $211,945.00
(52.99/foot)

RECAPITULATION OF COST ESTIMATES

Surface Exploration	Quantity	Total Cost	Item Cost
Phase 1. Geochemical Sampling	2000 samples	$3,350.00	$1.66/sample
Phase 2. Bulldozer trenching	100 hours	2,792.75	27.94/hour
Total Surface Exploration		$6,142.75	

Underground Exploration			
Crosscutting and Drifting	4000 feet	$211,945.00	52.99/foot
TOTAL COST ALL PROJECTS		$218,088.75	

REFERENCES CITED

Lakin, H.W., Almond, Hy, and Ward, F.N.(1952) Compilation of field methods used in geochemical prospecting by the U.S. Geological Survey: U.S. Geol. Survey Circ. 161

Ross, C.P., and Forrester, J.Donald(1958) outline of the Geology of Idaho: Idaho Bur. Mines and Geol. Bull. No. 15

Umpleby, Joseph B.(1913) Geology and Ore deposits of Lemhi County, Idaho: U.S. Geol. Survey Bull. 528

APPENDIX

Sample And Production Data

[illegible] [illegible] [illegible] [illegible]

Sample No.	Width	Oz. Ag	Value	% Pb	Value	% Zn	Value
1-1	1.7	17.00	30.22	15.12	25.70	0.20	0.34
2-2	0.8'	5.90	4.72	4.10	3.28	0.10	0.08
2-4	2.9'	44.00	130.00	21.98	64.00	9.40	27.25
2-7	1.3'	4.00	5.20	26.25	34.15	0.20	0.26
3-1	1.2'	17.00	20.85	9.98	11.98	24.90	29.85
3-5	0.7'	29.00	20.30	35.18	24.60	8.50	5.95
4-1	1.7'	4.50	7.65	13.13	22.35	0.80	1.36
4-3	0.4'	32.10	12.85	28.35	11.32	5.80	2.32
4-4	0.8'	25.90	20.75	35.18	28.10	nil	0.00
4-5	1.5'	50.80	76.10	25.20	37.80	4.70	7.05
4-7	1.2'	12.20	14.62	13.65	16.38	6.30	7.56
4-8	2.0'	24.50	49.00	30.45	60.90	12.10	24.20
4-9	2.0'	13.20	26.40	19.43	38.86	8.40	16.30
4-11	3.0'	11.20	33.60	28.35	85.00	8.20	24.60
4-12	1.0'	12.50	12.50	13.65	13.65	4.30	4.30
5-1	1.1'	5.80	6.38	6.83	7.51	7.90	8.69
5-2	0.0'	12.90	10.32	6.30	5.04	2.60	2.08
5-3	2.2'	31.70	69.75	18.38	40.48	22.60	49.70
5-4	0.3'	14.40	4.32	9.98	2.99	17.90	5.37
5-5	1.1'	40.60	44.70	30.45	33.50	11.60	12.76
5-6	0.7'	22.00	15.95	40.95	28.62	nil	0.00
5-8	1.0'	19.50	19.50	27.30	27.30	nil	0.00
5-9	0.4'	8.00	3.20	20.48	8.20	19.20	7.68
5-10	0.7'	2.30	1.61	9.98	6.98	16.20	11.33
TOTALS	39.50		640.49		658.61		249.55
AVGS.	1.27'		21.0 oz. Ag.		21.59% Pb		8.18% Zn

/All samples by P.F. Shockey: all assays by Montana Laboratory Co., Philipsburg, Montana; certificates available upon request. See Figures 4-8-, 13, and 14 and Plate I for location of these and other samples recently taken in the Democrat, et al., area.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION I

Albany Office
of Mineral Resources

P. O. BOX 492
ALBANY, OREGON

File No: AOMR 2010 G

May 14, 1962

Mr. Philip N. Shockey
Box 92
Salmon, Idaho

Dear Mr. Shockey:

Enclosed are the production records for the Hilltop, Alex Stevens, Canadian-Democrat, and Jumbo properties, located in the Texas mining district, Lemhi County, Idaho, which you requested in your letter of May 4. We have no production data on the Fairview, Glendale, McClellan, and McKinley properties.

Our records show the Canadian-Democrat as one property instead of two as you have shown them.

Sincerely yours,

A. J. Kauffman, Jr., Chief
Albany Office of Mineral Resources
Region I

Enclosures:

PRODUCTION
Texas Mining District
Lemhi County, Utah

Democrat-Canadian

Year	Ore (Short Tons)	Gold (Ounces)	Silver (Ounces)	Copper (Pounds)	Lead (Pounds)
1901	30	3	750	-	15,500
1902-16	No Production				
1917	21	1	160	152	11,165
1918-57	No Production				
	51*	4	910	152	26,665
		0.08 oz/T	17.82 oz/T	0.15%	26.10%

Jumbo

1901-09	No Production				
1910	6	-	153	64	3,455
1911-15	No Production				
1916	30	2	683	248	9,174
1917-57	No Production				
	36	2	836	312	12,629
		0.06 oz/T	23.21 oz/T	0.43%	17.55%

Alex Stevens

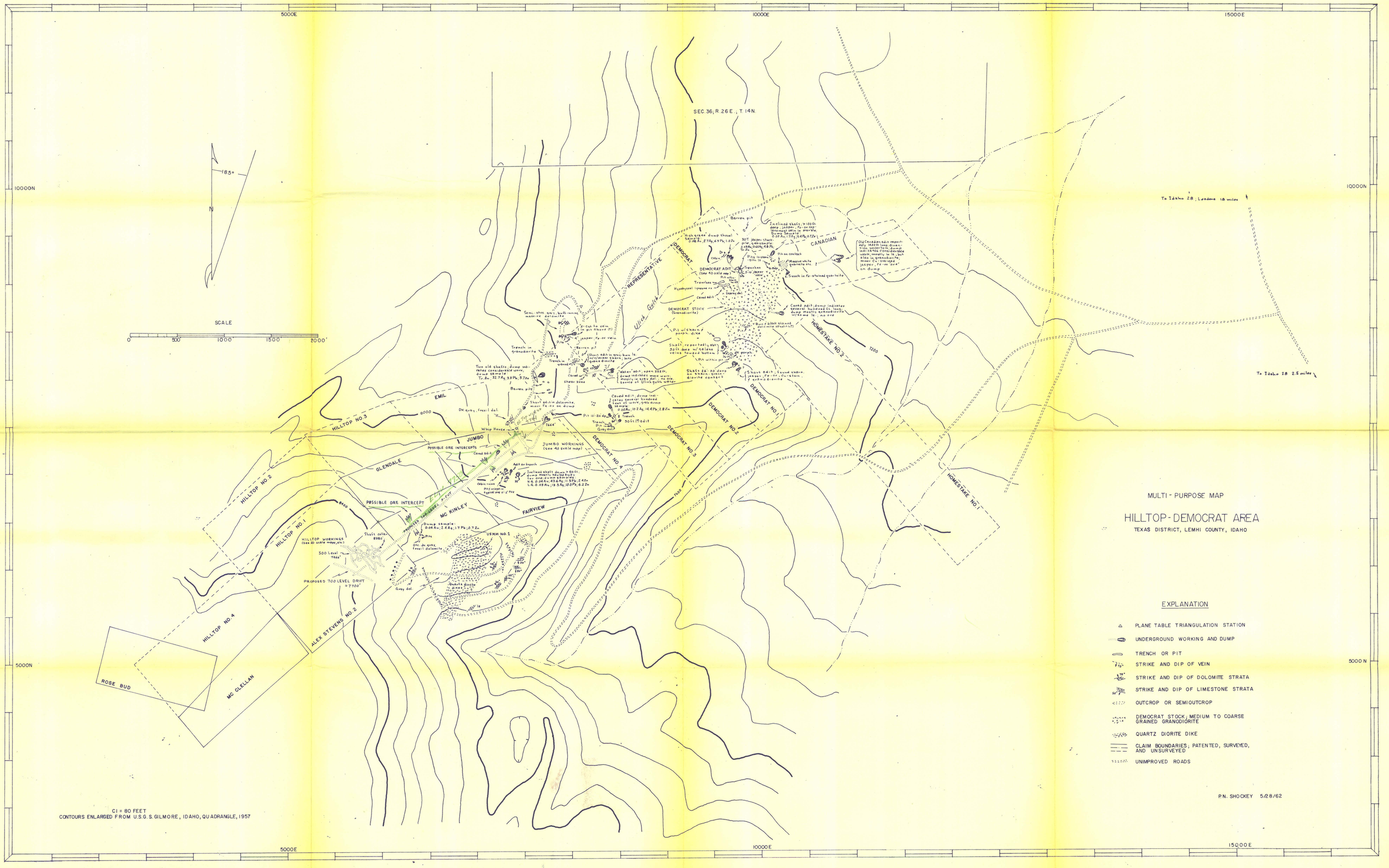
1901-17	No Production				
1918	30	4	320	178	8,492
1919-20	No Production				
1921	68	18	906	336	19,360
1923-57	No Production				
	98	22	1226	514	27,852
		0.22 oz/T	12.50 oz/T	0.26%	14.21%

*Totals & computations by R.M. Shoemaker

PRODUCTION HILL TOP GROUP *
Texas Mining District
Lemhi County, Idaho

Ore (Short Tons)	Gold (Ounces)	Silver (Ounces)	Copper (Pounds)	Lead (Pounds)	
Production					
145	12	1,563	578	27,066	
Production					
[illegible]	6	600	178	11,311	
[illegible]	33	2,900	1,138	52,800	
130	17	1,591	600	29,500	
589	113	6,851	3,759	175,136	
1,038	258	12,738	5,920	284,743	
2,713	448	40,907	20,693	889,092	
[illegible]	412	23,885	13,419	588,058	
[illegible]	[illegible]	9,259	[illegible]	197,[illegible]	
[illegible]	[illegible]	9,760	4,316	[illegible]	
[illegible]	[illegible]	542	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	185,[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	188,500	
[illegible]	[illegible]	[illegible]	[illegible]	8,100	
[illegible]	[illegible]	[illegible]	[illegible]	7,700	4,900
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	15.15%	[illegible]	[illegible]

* [illegible]


5000E
10000E
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SEC. 36; R. 26 E.; T. 14 N.
18.5°
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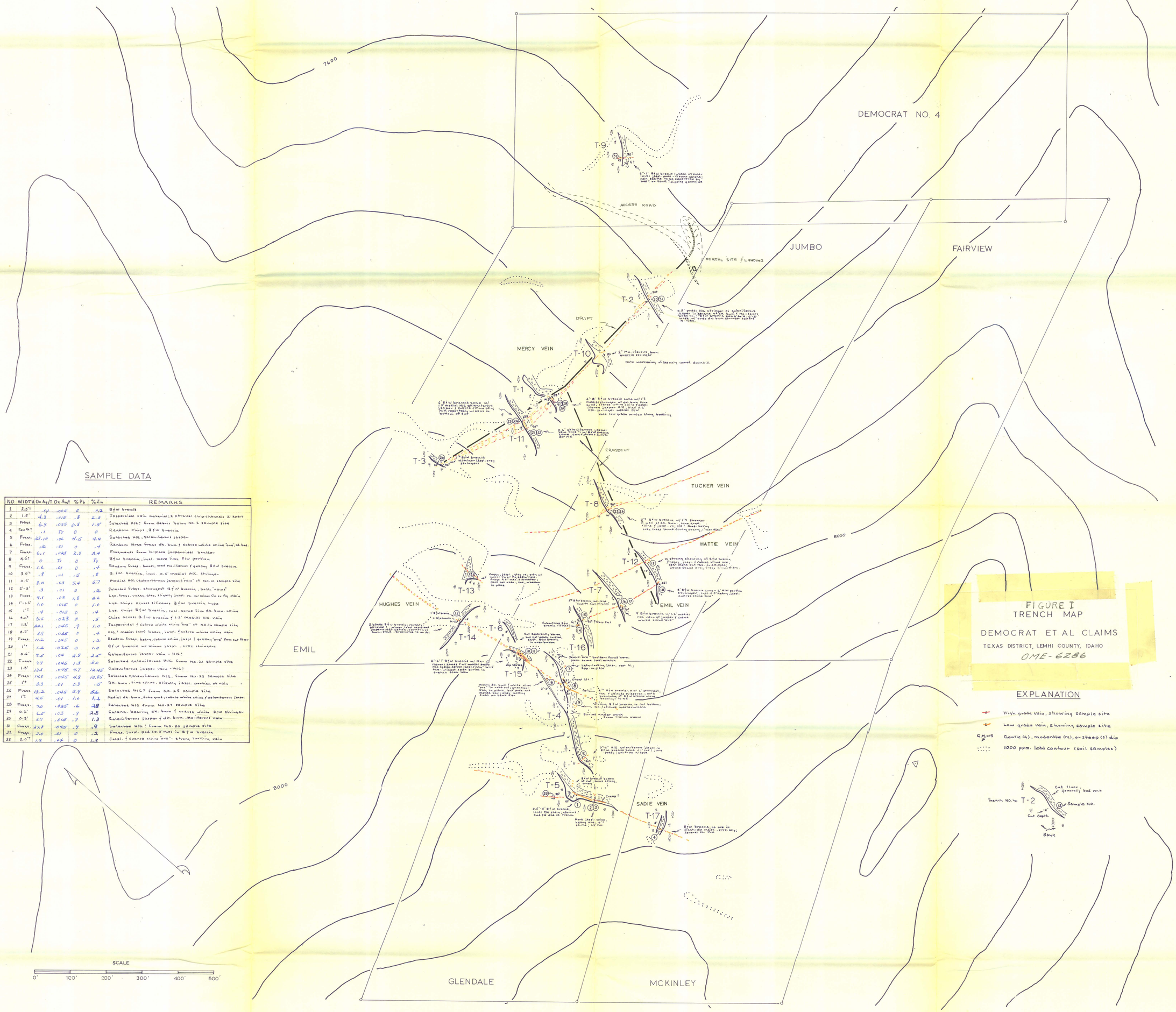
SCALE
0
500
1000'
1500
2000'
To Idaho 28; Leadore 18 miles
To Idaho 28 2.5 miles
DEMOCRAT
REPRESENTATIVE
CANADIAN
HOMESTAKE NO. 2
HOMESTAKE NO. 1
DEMOCRAT NO. 1
DEMOCRAT NO. 2
DEMOCRAT NO. 3
DEMOCRAT NO. 4
EMIL
HILLTOP NO. 3
HILLTOP NO. 2
HILLTOP NO. 1
HILLTOP NO. 4
JUMBO
GLENDALE
MC KINLEY
FAIRVIEW
ALEX STEVENS NO. 2
ROSE BUD
MC CLELLAN
Ulick Gulch
DEMOCRAT ADIT (See 40 scale map)
DEMOCRAT STOCK (Granodiorite)
JUMBO WORKINGS (See 40 scale map)
HILLTOP WORKINGS (See 20 scale maps, etc.)
POSSIBLE ORE INTERCEPTS
POSSIBLE ORE INTERCEPT
PROPOSED 700 LEVEL DRIFT
500 Level 7666'
USMM NO. 1
Barren pit
Trenches
Caved adit
Shaft collar 8980'
Grey dol.
Shoots diorite dikes
Dk. gray, fossil dolomite
Wind House
Adit or trench
Obs. ruins
Pit or trench
Pit
CI = 80 FEET
CONTOURS ENLARGED FROM U.S.G.S. GILMORE, IDAHO, QUADRANGLE, 1957
MULTI - PURPOSE MAP
HILLTOP - DEMOCRAT AREA
TEXAS DISTRICT, LEMHI COUNTY, IDAHO
EXPLANATION
PLANE TABLE TRIANGULATION STATION
UNDERGROUND WORKING AND DUMP
TRENCH OR PIT
STRIKE AND DIP OF VEIN
STRIKE AND DIP OF DOLOMITE STRATA
STRIKE AND DIP OF LIMESTONE STRATA
OUTCROP OR SEMIOUTCROP
DEMOCRAT STOCK; MEDIUM TO COARSE GRAINED GRANODIORITE
QUARTZ DIORITE DIKE
CLAIM BOUNDARIES; PATENTED, SURVEYED, AND UNSURVEYED
UNIMPROVED ROADS
P.N. SHOCKEY 5/28/62



SAMPLE DATA

NO.	WIDTH	Oz Ag/T	Oz Au/T	% Pb	% Zn	REMARKS
1	2.5'	.01	.005	0	0.2	B&W breccia
2	1.5'	4.3	.015	.8	2.5	Jasperoidal vein material; 2 parallel chip channels 2' apart
3	Frags.	6.3	.025	0.8	1.5	Selected HG? from debris below No. 2 sample site
4	Few ft?	.1	Tr	0	0	Random chips, B&W breccia
5	Frags.	28.10	.06	4.5	4.4	Selected HG, galeniferous jasper
6	Frags.	.12	.01	0	.4	Random large frags dk. brn. & cobble white alline 'ore', rd. bed.
7	Frags.	6.1	.025	2.8	2.4	Fragments from in-place jasperoidal boulder
8	4.0'	0	Tr	0	Tr	B&W breccia, incl. many lime B&W portion
9	Frags.	1.6	.01	0	.4	Random frags., bowls, mostly Mai. & very few B&W breccia
10	3.0'	.9	.01	.5	.8	B.&W. breccia, incl. 0.5' medial HG. stringer
11	0.5'	8.0	.03	5.4	6.7	Medial HG (galeniferous jasper) vein at No. 10 sample site
12	2'-3'	.3	.01	0	.2	Selected frags. strongest B&W breccia, both "veins"
13	Frags.	9.1	.02	1.8	2.6	Lge. frags. vuggy, qtzy, slightly jaspl. rx. w/ minor Cu & Aq stain
14	1'-1.5'	1.0	.015	0	1.0	Lge. chips across siliceous B&W breccia hypo
15	1'	.4	.015	0	.4	Lge. chips B&W breccia, incl. some lime dk. brn. alline
16	4.0'	3.4	.023	0	.5	Chips across B&W breccia & 1.2' medial HG. vein
17	1.2'	24.1	.045	.9	1.0	Jasperoidal & cobble white alline "ore" at No. 16 sample site
18	0.7'	3.9	.035	0	.4	HG.? medial (min) habry, jaspl. & cobble white alline vein
19	Frags.	11.2	.045	0	.2	Random frags., habry, cobble alline, jaspl. & qstzdny "ore" from cut slope
20	1'?	1.2	.025	0	1.0	B&W breccia w/ minor jaspl., many stringers
21	0.6'	7.5	.04	2.8	2.5	Galeniferous jasper vein - HG?
22	Frags.	4.7	.045	1.3	3.0	Selected galeniferous HG. from No. 21 sample site
23	1.3'	13.8	.045	4.7	12.45	Galeniferous jasper vein - HG?
24	Frags.	14.8	.045	4.3	10.85	Selected galeniferous HG. from No. 23 sample site
25	1'?	3.3	.01	0.3	.5	Dk. brn., fine alline, slightly jaspl. portion of vein
26	Frags.	18.2	.045	3.9	5.6	Selected HG.? from No. 25 sample site
27	1'?	4.6	.01	1.0	1.2	Medial dk. brn., fine qtzd; cobble white alline & galeniferous jasper
28	Frags.	2.0	.025	.6	.28	Selected HG from No. 27 sample site
29	0.2'	6.5	.03	.7	21.8	Galena-bearing dk. brn & cobble white B&W stringer
30	0.5'	8.7	.015	.7	1.3	Galeniferous jasper & dk. brn. Mai. & few vein
31	Frags.	27.1	.045	.9	.9	Selected HG.? from No. 30 sample site
32	Frags.	2.6	.01	0	.2	Frags. jaspl. med. co. & (min) in B&W breccia
33	2.0'	1.2	.01	0	1.8	Jaspl. & coarse alline "ore" - strong twisting vein

FIGURE I
TRENCH MAP

DEMOCRAT ET AL CLAIMS

TEXAS DISTRICT, LEMHI COUNTY, IDAHO

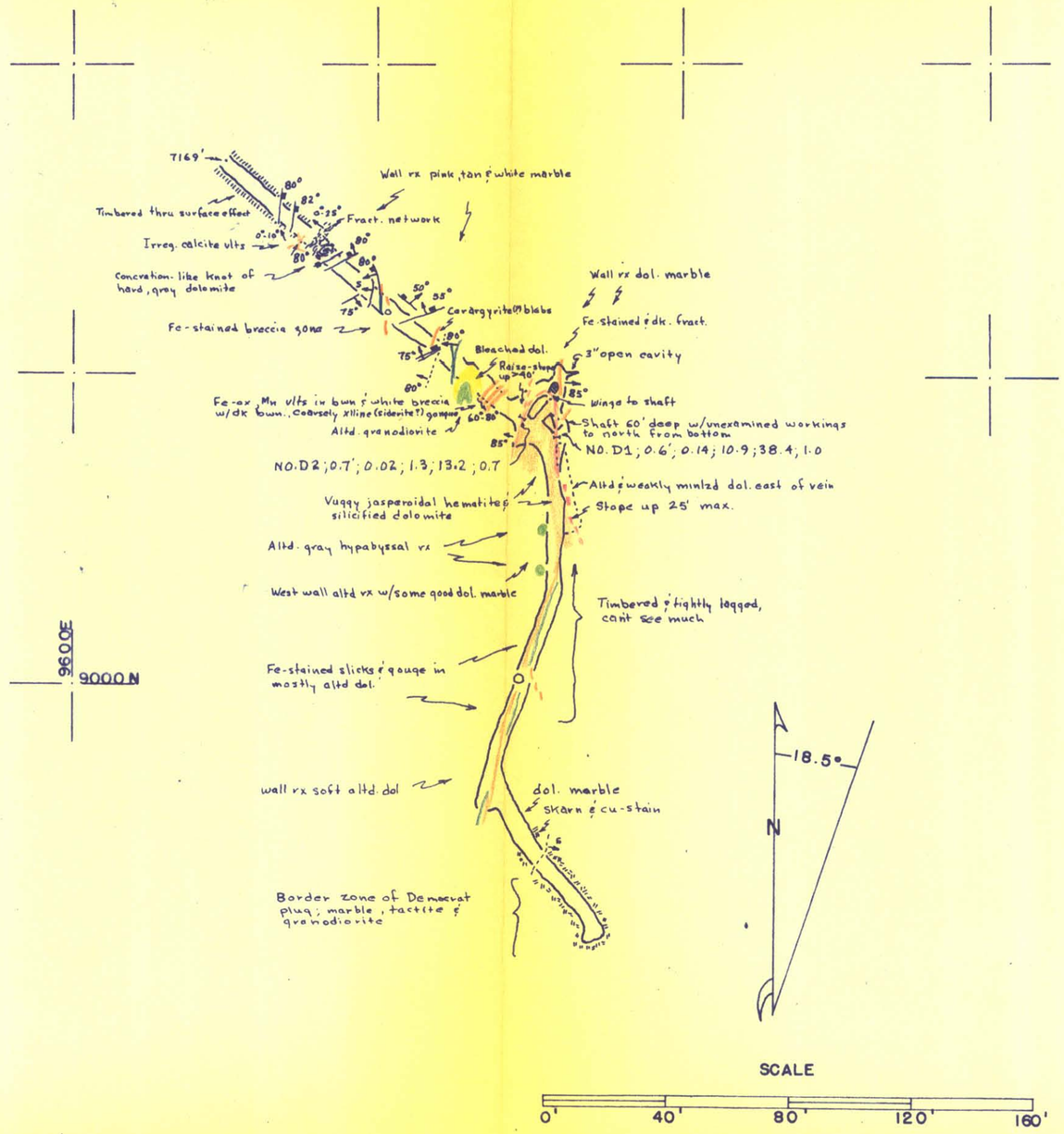
OME-6286

PNS 9/3/63

GEOLOGIC MAP
OF THE

DEMOCRAT ADIT

TEXAS DISTRICT, LEMHI COUNTY, IDAHO



SCALE

0' 40' 80' 120' 160'

P. N. SHOCKEY 5/26/62

EXPLANATION

OUTLINE OF WORKINGS

SHAFT

STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT

STRIKE AND DIP OF BED

STRIKE AND DIP OF JOINT

STRIKE AND DIP OF CLEAVAGE

STRIKE AND DIP OF STRUCTURE THAT IS EITHER BEDDING OR CLEAVAGE; OTHER SIMILAR COMBINATIONS USED

STRIK AND DIP OF FAULT

STRIKE AND DIP OF VEIN

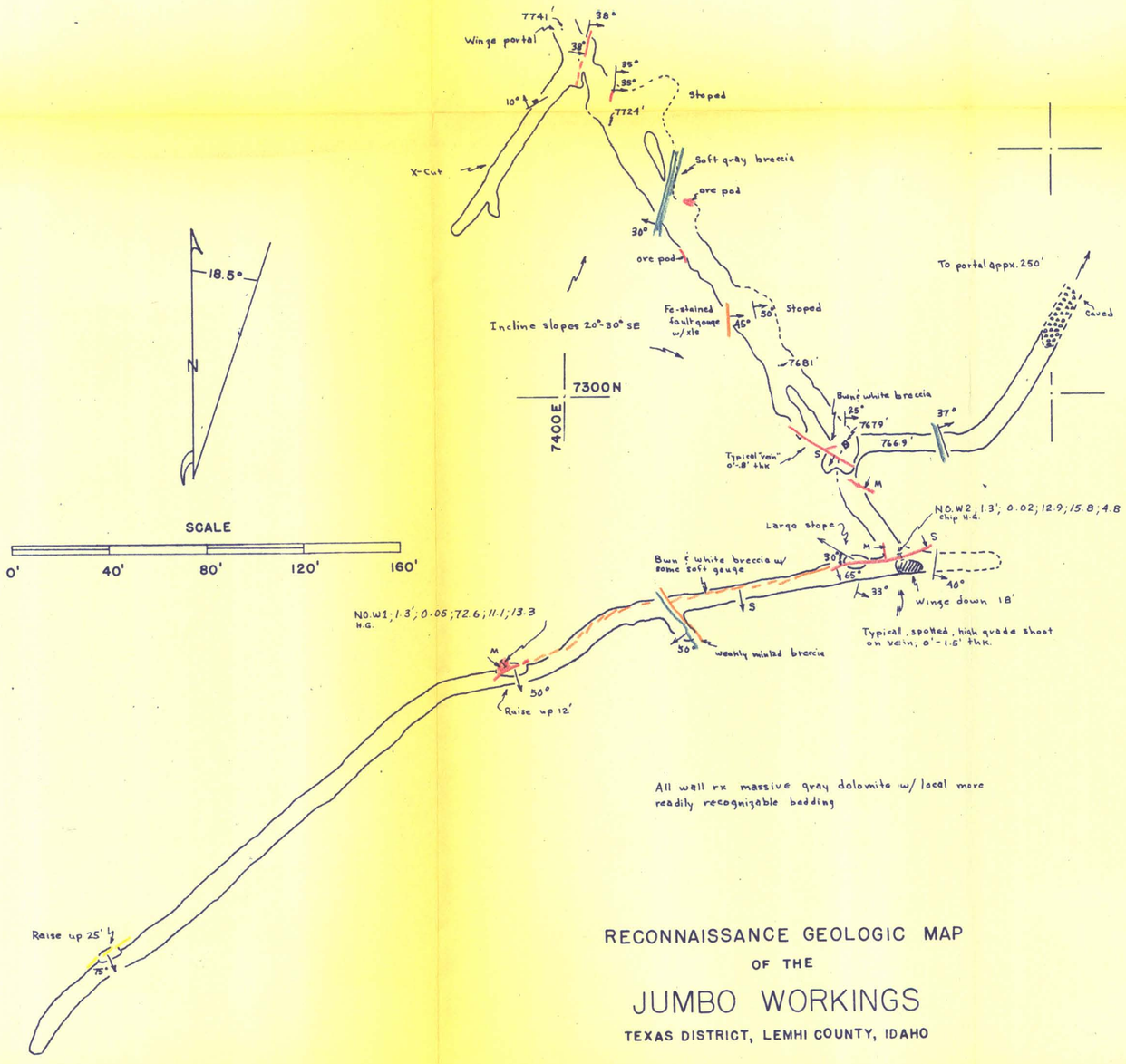
STRIKE AND DIP OF WEAKLY MINERALIZED STRUCTURE

STRIKE AND DIP OF STRUCTURE WITH UNMEASURED BUT STEEP MODERATE, OR GENTLE DIP ANGLE

SAMPLE SITE

SAMPLE NUMBER, WIDTH IN FEET, AND VALUE IN OZ AU; OZ AG; % PB, AND % ZN RESPECTIVELY; ALL SAMPLES BY P.N. SHOCKEY; ASSAYS BY PETER MACK, WALLACE, IDAHO

BLECHED OR ALTERED ROCK



EXPLANATION

- OUTLINE OF WORKINGS
- CHUTE - MANWAY
- 60° — STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 55° — STRIKE AND DIP OF BED
- 85° — STRIKE AND DIP OF JOINT
- 45° — STRIKE AND DIP OF CLEAVAGE
- 70° — STRIKE AND DIP OF STRUCTURE THAT IS EITHER BEDDING OR CLEAVAGE; OTHER SIMILAR COMBINATIONS USED
- 60° — STRIKE AND DIP OF FAULT
- 63° — STRIKE AND DIP OF VEIN
- 40° — STRIKE AND DIP OF WEAKLY MINERALIZED STRUCTURE
- S, M, or G — STRIKE AND DIP OF STRUCTURE WITH UNMEASURED BUT STEEP, MODERATE, OR GENTLE DIP ANGLE
- SAMPLE SITE
- N.O.W-1; 1.3'; 0.05; 72.6; 11.1; 13.3 — SAMPLE NUMBER, WIDTH IN FEET, AND VALUE IN OZ AU; OZ AG; % PB, AND % ZN RESPECTIVELY; ALL SAMPLES BY P.N. SHOCKEY; ASSAYS BY PETER MACK, WALLACE, IDAHO
- BLEACHED OR ALTERED ROCK

RECONNAISSANCE GEOLOGIC MAP OF THE JUMBO WORKINGS

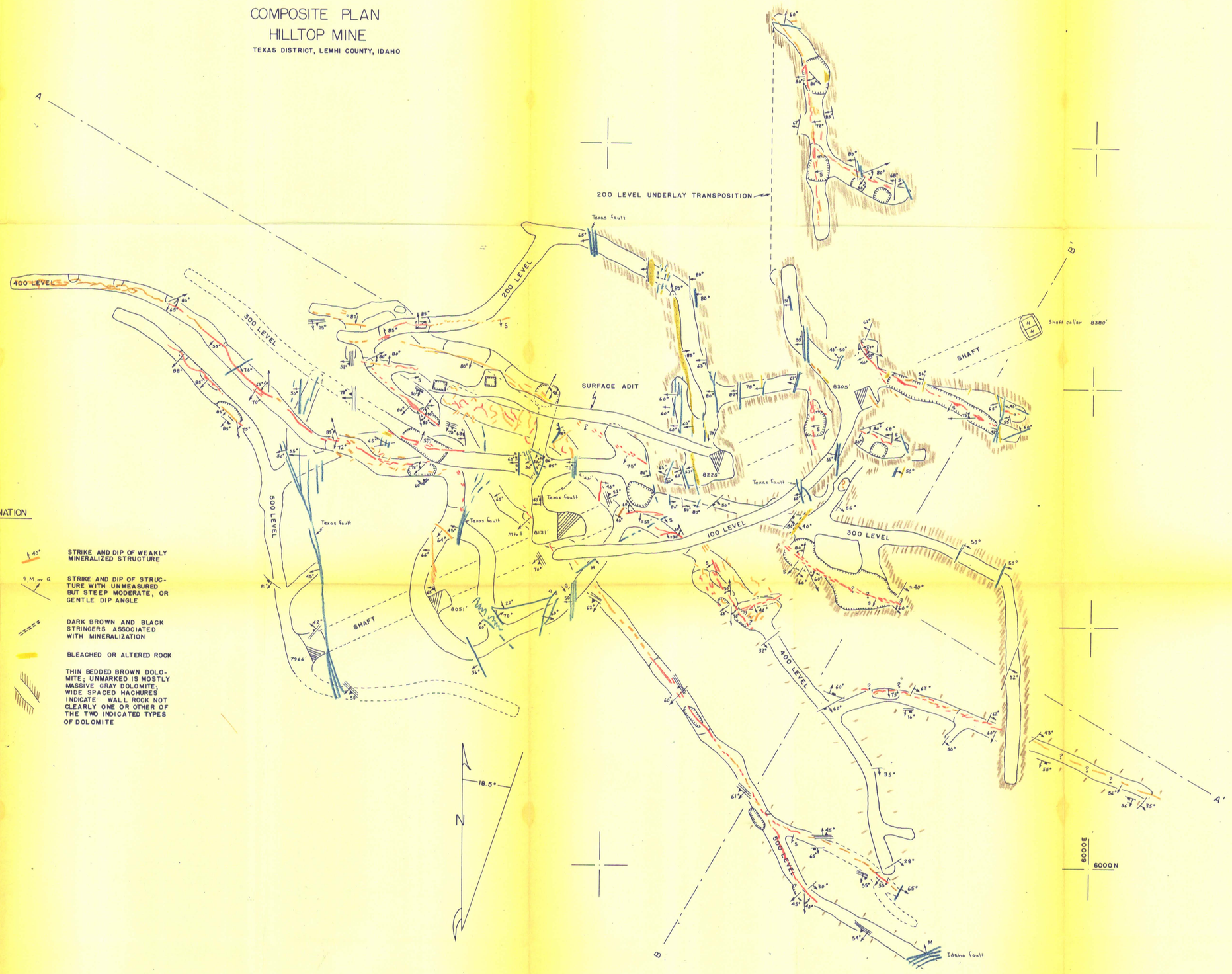
TEXAS DISTRICT, LEMHI COUNTY, IDAHO

P.N. SHOCKEY 5/26/62

RECONNAISSANCE GEOLOGIC MAP

COMPOSITE PLAN
HILLTOP MINE

TEXAS DISTRICT, LEMHI COUNTY, IDAHO



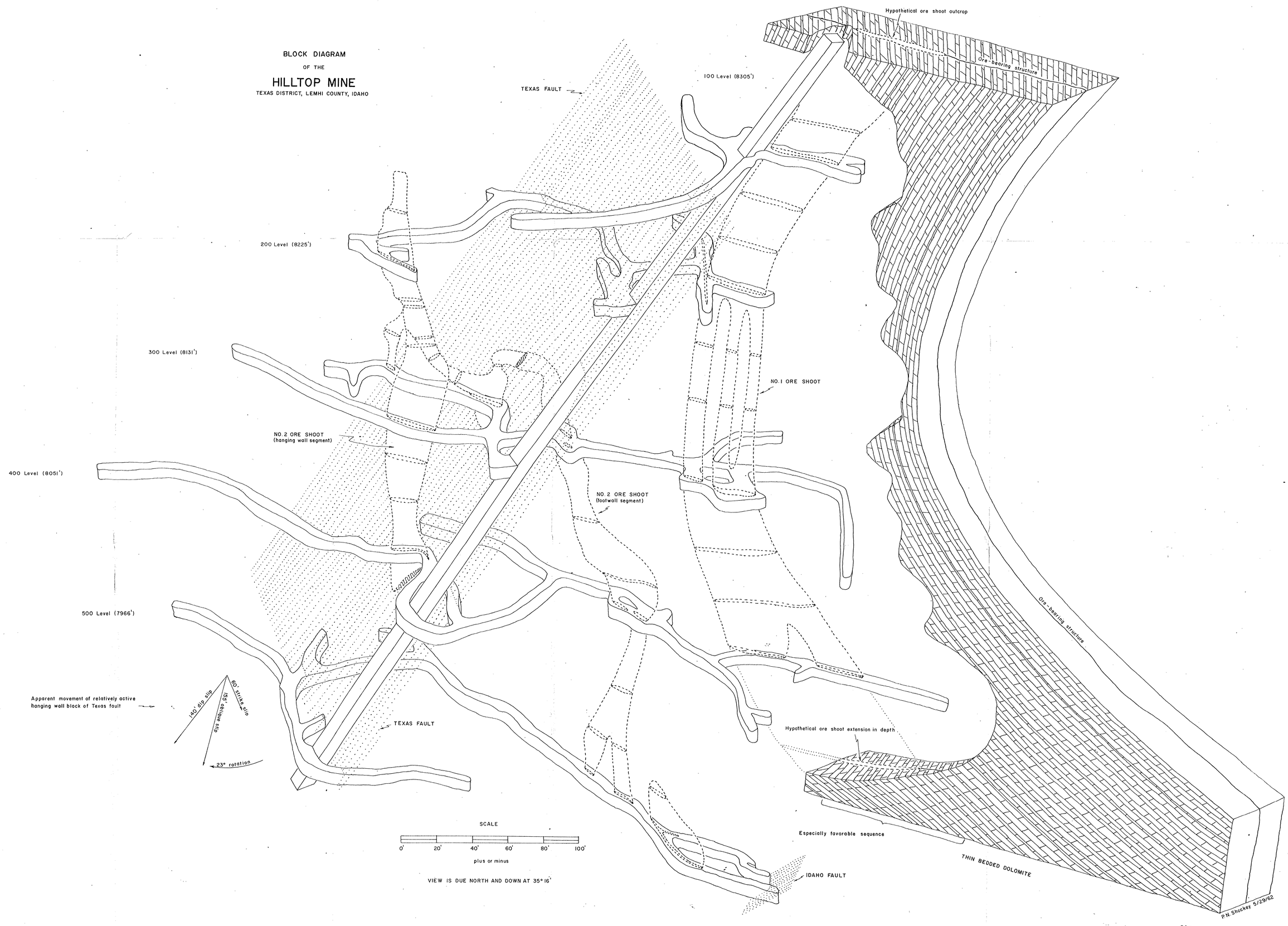
EXPLANATION

- OUTLINE OF WORKINGS
- 8225 — SHAFT STATION SHOWING ELEVATION
- H M — SHAFT COLLAR SHOWING HOIST AND MANWAY COMPARTMENT
- WINZE - STOPE (UNDERHAND STOPE) WITH OR WITHOUT STOPE ABOVE
- 60° 60° — STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 59° — STRIKE AND DIP OF BED
- 85° — STRIKE AND DIP OF JOINT
- 45° — STRIKE AND DIP OF CLEAVAGE
- 70° — STRIKE AND DIP OF STRUCTURE THAT IS EITHER BEDDING OR CLEAVAGE; OTHER SIMILAR COMBINATIONS USED
- 60° — STRIKE AND DIP OF FAULT
- 65° — STRIKE AND DIP OF VEIN
- 40° — STRIKE AND DIP OF WEAKLY MINERALIZED STRUCTURE
- S, M, or G — STRIKE AND DIP OF STRUCTURE WITH UNMEASURED BUT STEEP MODERATE, OR GENTLE DIP ANGLE
- DARK BROWN AND BLACK STRINGERS ASSOCIATED WITH MINERALIZATION
- BLEACHED OR ALTERED ROCK
- THIN BEDDED BROWN DOLOMITE; UNMARKED IS MOSTLY MASSIVE GRAY DOLOMITE; WIDE SPACED HACHURES INDICATE WALL ROCK NOT CLEARLY ONE OR OTHER OF THE TWO INDICATED TYPES OF DOLOMITE

SCALE

0' 20' 40' 60' 80' 100' 120'

GEOLOGY BY P.N. SHOCKEY
SURVEYED BY HAMMOND-EVERLY ENGINEERING CO. BUTTE, MONTANA
DRAFTED BY P.N.S. 5/21/62

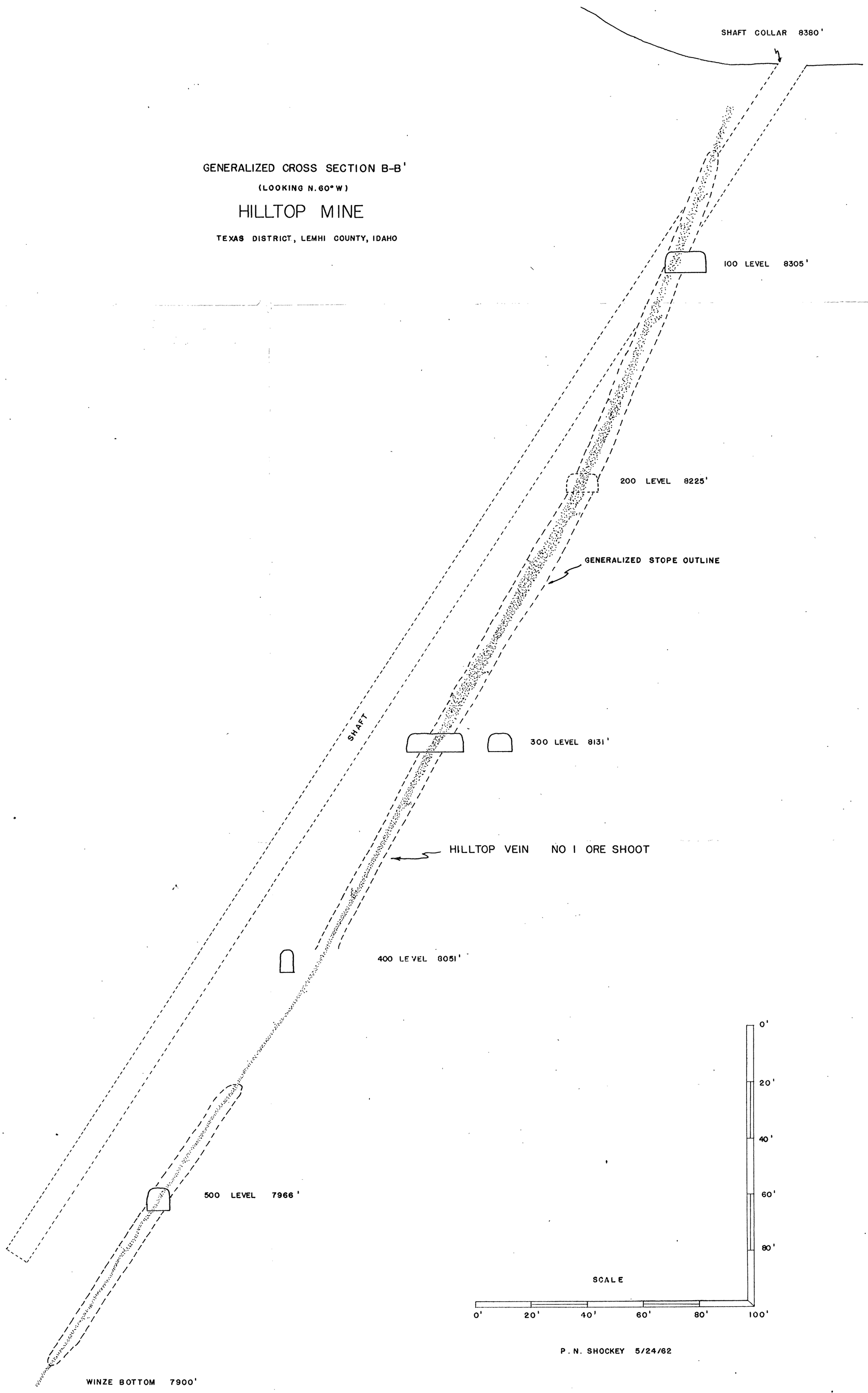

BLOCK DIAGRAM
OF THE
HILLTOP MINE
TEXAS DISTRICT, LEMHI COUNTY, IDAHO
Hypothetical ore shoot outcrop
Ore-bearing structure
100 Level (8305')
TEXAS FAULT
200 Level (8225')
300 Level (8131')
NO. 1 ORE SHOOT
NO. 2 ORE SHOOT
(hanging wall segment)
400 Level (8051')
NO. 2 ORE SHOOT
(footwall segment)
500 Level (7966')
Ore-bearing structure
Apparent movement of relatively active
hanging wall block of Texas fault
140' dip slip
60' strike slip
151' oblique slip
23° rotation
TEXAS FAULT
Hypothetical ore shoot extension in depth
SCALE
0'
20'
40'
60'
80'
100'
plus or minus
VIEW IS DUE NORTH AND DOWN AT 35° 16'
Especially favorable sequence
IDAHO FAULT
THIN BEDDED DOLOMITE
P.N. Shockey 5/29/62

GENERALIZED CROSS SECTION B-B'

(LOOKING N.60° W)

HILLTOP MINE

TEXAS DISTRICT, LEMHI COUNTY, IDAHO



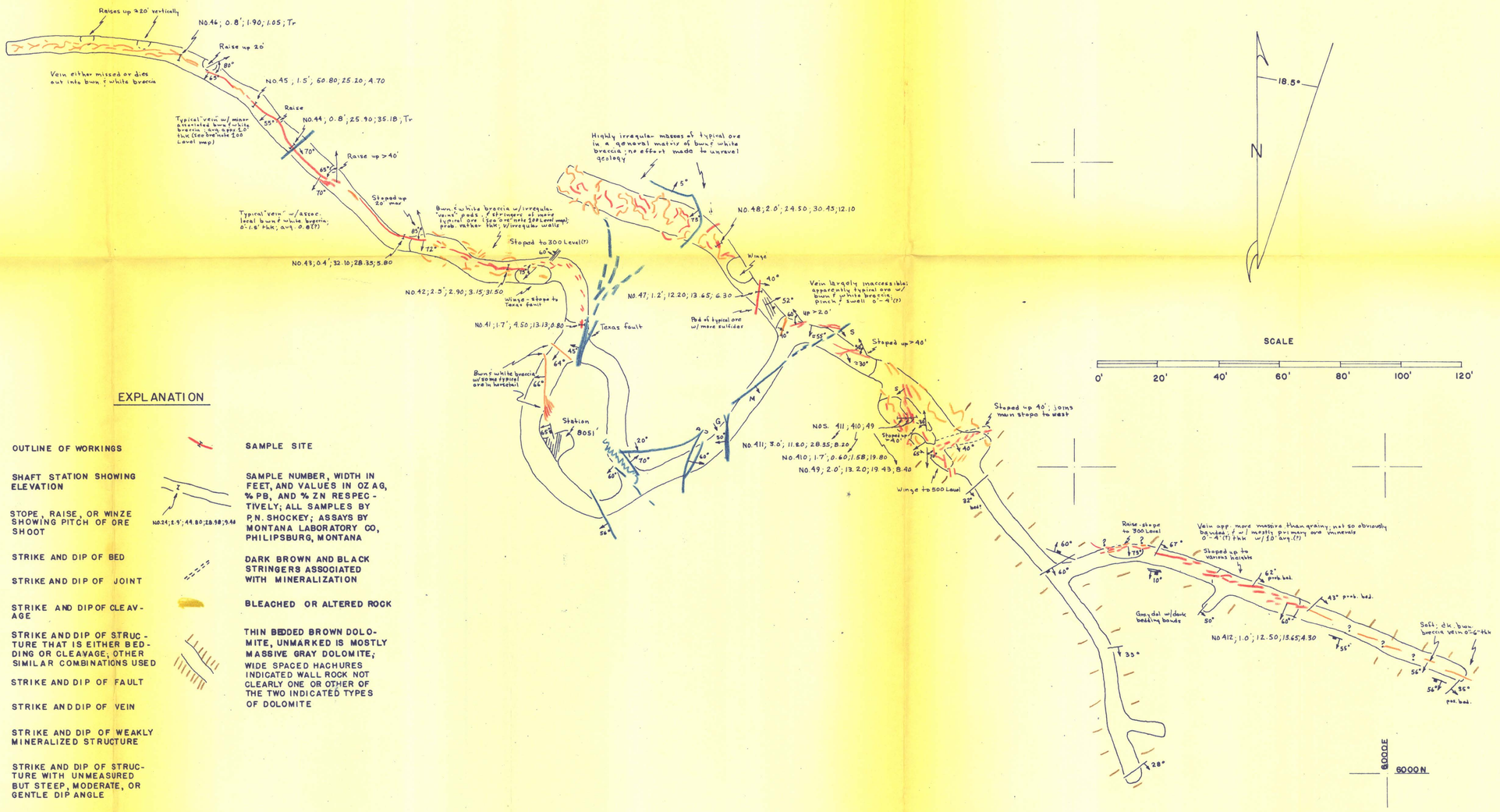
P. N. SHOCKEY 5/24/62

RECONNAISSANCE GEOLOGIC MAP

OF THE

400 LEVEL
HILLTOP MINE

TEXAS DISTRICT, LEMHI COUNTY, IDAHO



EXPLANATION

- OUTLINE OF WORKINGS
- 8225' SHAFT STATION SHOWING ELEVATION
- STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- STRIKE AND DIP OF BED
- STRIKE AND DIP OF JOINT
- STRIKE AND DIP OF CLEAVAGE
- STRIKE AND DIP OF STRUCTURE THAT IS EITHER BEDDING OR CLEAVAGE, OTHER SIMILAR COMBINATIONS USED
- STRIKE AND DIP OF FAULT
- STRIKE AND DIP OF VEIN
- STRIKE AND DIP OF WEAKLY MINERALIZED STRUCTURE
- S, M, or G STRIKE AND DIP OF STRUCTURE WITH UNMEASURED BUT STEEP, MODERATE, OR GENTLE DIP ANGLE
- SAMPLE SITE
- No.24; 2.9'; 49.80; 28.98; 9.48 SAMPLE NUMBER, WIDTH IN FEET, AND VALUES IN OZ AG, % PB, AND % ZN RESPECTIVELY; ALL SAMPLES BY P.N. SHOCKEY; ASSAYS BY MONTANA LABORATORY CO, PHILIPSBURG, MONTANA
- DARK BROWN AND BLACK STRINGERS ASSOCIATED WITH MINERALIZATION
- BLEACHED OR ALTERED ROCK
- THIN BEDDED BROWN DOLOMITE, UNMARKED IS MOSTLY MASSIVE GRAY DOLOMITE; WIDE SPACED HACHURES INDICATED WALL ROCK NOT CLEARLY ONE OR OTHER OF THE TWO INDICATED TYPES OF DOLOMITE

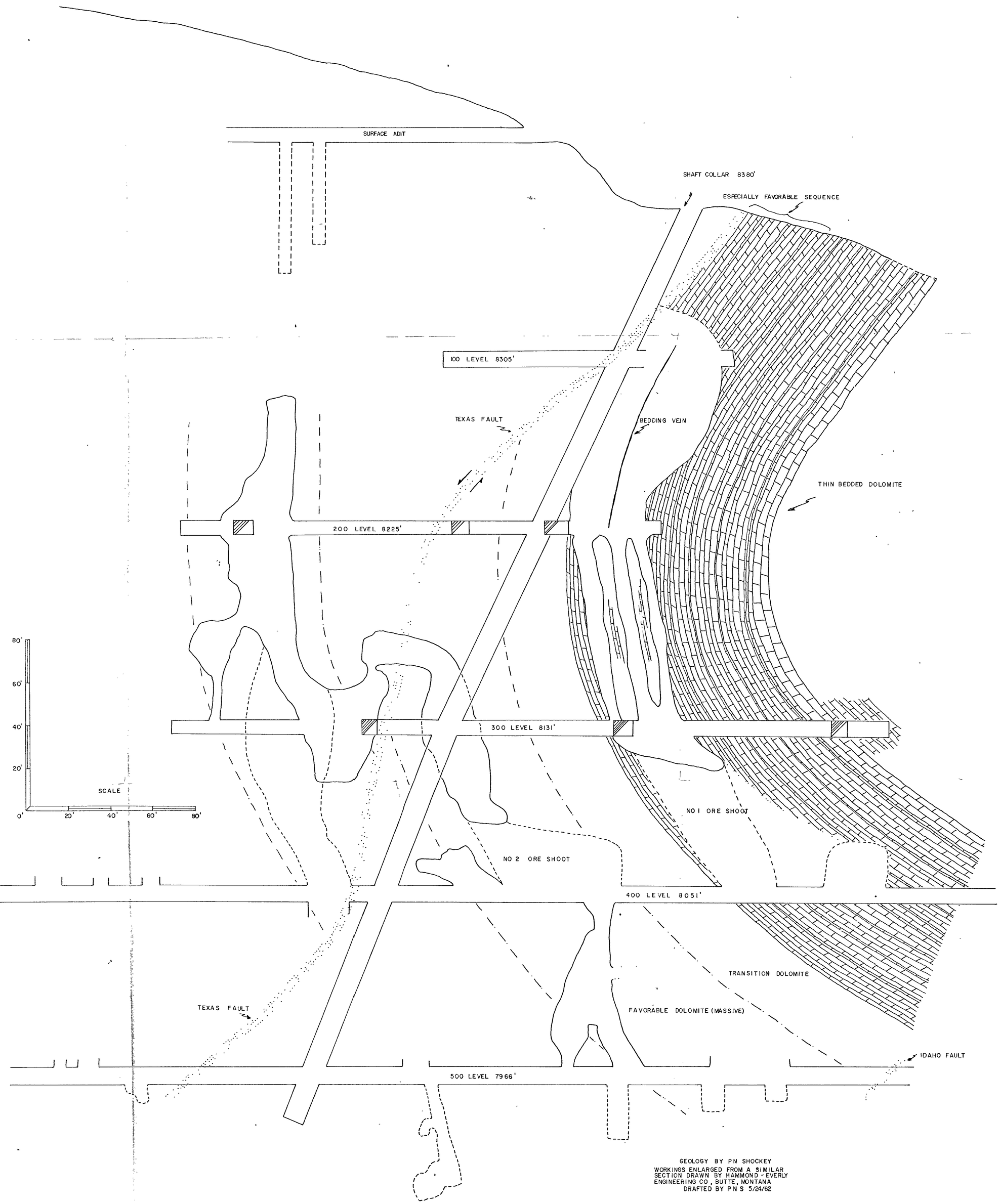
GEOLOGY BY P.N. SHOCKEY
SURVEYED BY HAMMOND-EVERLY ENGINEERING CO, BUTTE, MONTANA
DRAFTED BY P.N.S. 5/21/62

GENERALIZED LONGITUDINAL SECTION A-A'

(LOOKING N 30° E)

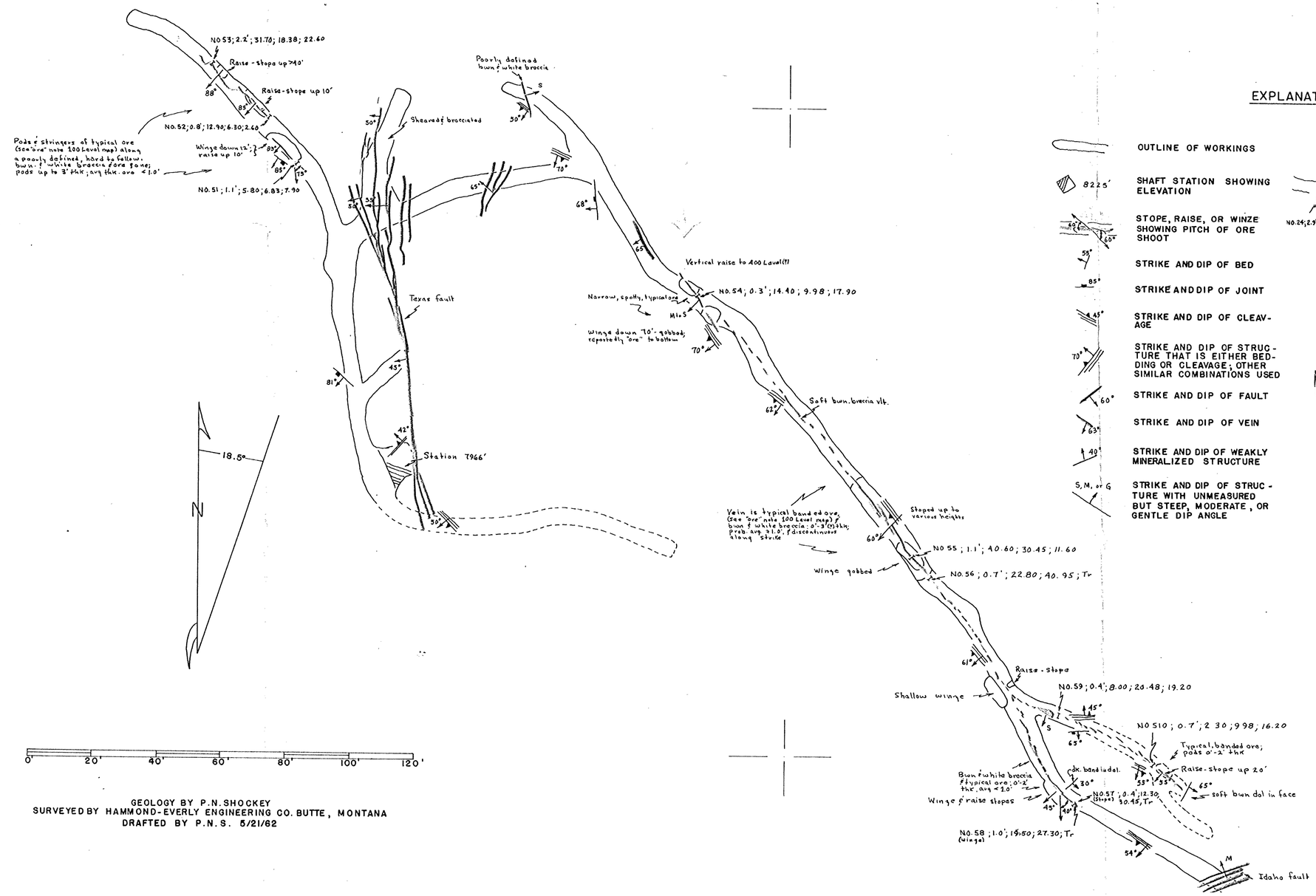
HILLTOP MINE

TEXAS DISTRICT, LEMHI COUNTY, IDAHO



GEOLOGY BY P N SHOCKEY
WORKINGS ENLARGED FROM A SIMILAR SECTION DRAWN BY HAMMOND - EVERLY ENGINEERING CO, BUTTE, MONTANA
DRAFTED BY P N S 5/24/62

RECONNAISSANCE GEOLOGIC MAP
OF THE
500 LEVEL
HILLTOP MINE
TEXAS DISTRICT, LEMHI COUNTY, IDAHO



EXPLANATION

- OUTLINE OF WORKINGS
- 8225' — SHAFT STATION SHOWING ELEVATION
- STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 58° — STRIKE AND DIP OF BED
- 85° — STRIKE AND DIP OF JOINT
- 45° — STRIKE AND DIP OF CLEAVAGE
- 70° — STRIKE AND DIP OF STRUCTURE THAT IS EITHER BEDDING OR CLEAVAGE; OTHER SIMILAR COMBINATIONS USED
- 60° — STRIKE AND DIP OF FAULT
- 63° — STRIKE AND DIP OF VEIN
- 40° — STRIKE AND DIP OF WEAKLY MINERALIZED STRUCTURE
- S, M, or G — STRIKE AND DIP OF STRUCTURE WITH UNMEASURED BUT STEEP, MODERATE, OR GENTLE DIP ANGLE
- SAMPLE SITE
- No.24; 2.5'; 44.80; 28.98; 9.40 — SAMPLE NUMBER, WIDTH IN FEET, AND VALUES IN OZ AG % PB, AND % ZN RESPECTIVELY; ALL SAMPLES BY P.N. SHOCKEY, ASSAYS BY MONTANA LABORATORY CO. PHILIPSBURG, MONTANA
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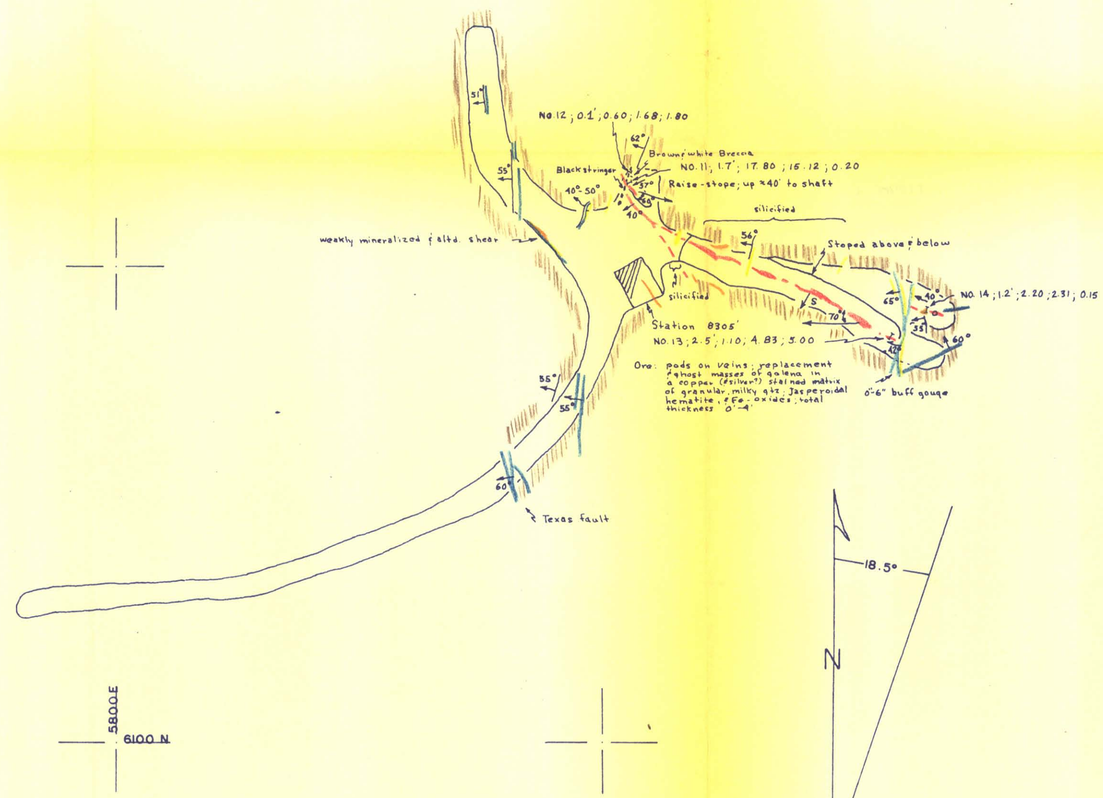
GEOLOGY BY P.N. SHOCKEY
SURVEYED BY HAMMOND-EVERLY ENGINEERING CO. BUTTE, MONTANA
DRAFTED BY P.N.S. 5/21/62

RECONNAISSANCE GEOLOGIC MAP
OF THE
100 LEVEL
HILLTOP MINE
TEXAS DISTRICT, LEMHI COUNTY, IDAHO



EXPLANATION

- OUTLINE OF WORKINGS
- SAMPLE SITE
- 8225 — SHAFT STATION SHOWING ELEVATION
- SAMPLE NUMBER, WIDTH IN FEET, AND VALUES IN OZ AG, % PB, AND % ZN RESPECTIVELY; ALL SAMPLES BY P.N. SHOCKEY, ASSAYS BY MONTANA LABORATORY CO. PHILIPSBURG, MONTANA (No.24; 2.9'; 44.80; 28.98; 9.48)
- 60° — STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 55° — STRIKE AND DIP OF BED
- 85° — STRIKE AND DIP OF JOINT
- 45° — STRIKE AND DIP OF CLEAVAGE
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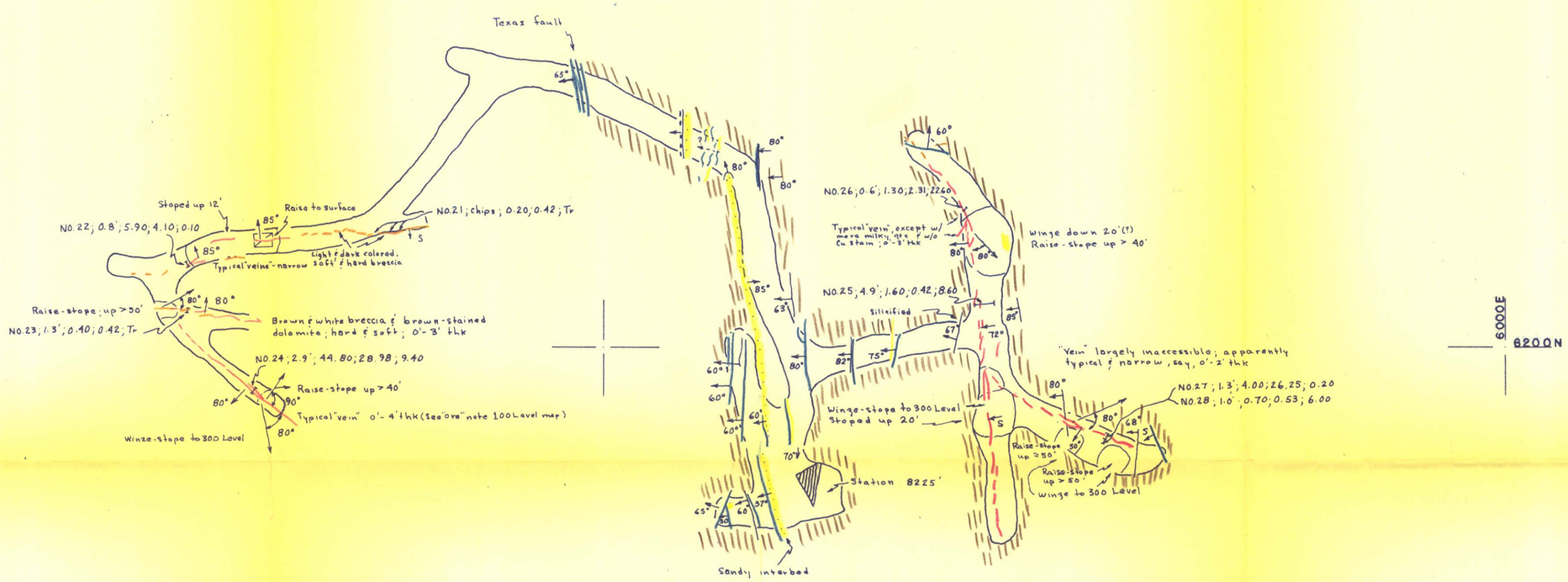
SCALE

0' 20' 40' 60' 80' 100' 120'

GEOLOGY BY P.N. SHOCKEY
SURVEYED BY HAMMOND-EVERLY ENGINEERING CO. BUTTE, MONTANA
DRAFTED BY P.N.S. 5/21/62

RECONNAISSANCE GEOLOGIC MAP
OF THE
200 LEVEL
HILLTOP MINE
TEXAS DISTRICT, LEMHI COUNTY, IDAHO



EXPLANATION

- OUTLINE OF WORKINGS
- 8225' — SHAFT STATION SHOWING ELEVATION
- 60° / 60° — STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 55° — STRIKE AND DIP OF BED
- 85° — STRIKE AND DIP OF JOINT
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- S, M, or G — STRIKE AND DIP OF STRUCTURE WITH UNMEASURED BUT STEEP, MODERATE, OR GENTLE DIP ANGLE
- SAMPLE SITE
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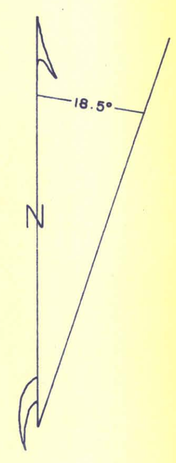


SCALE

0' 20' 40' 60' 80' 100' 120'

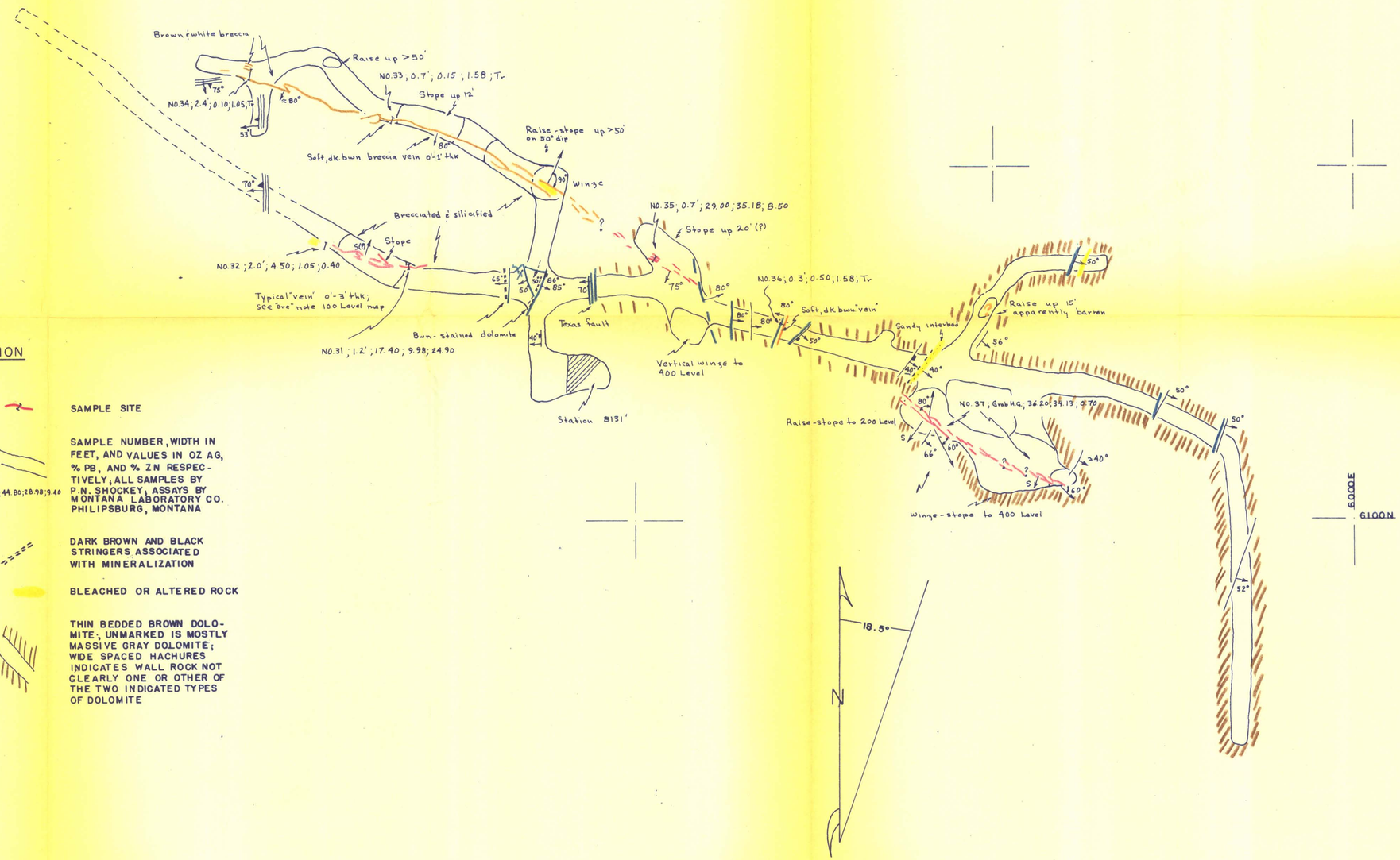
GEOLOGY BY P.N. SHOCKEY
SURVEYED BY HAMMOND-EVERLY ENGINEERING CO. BUTTE, MONTANA
DRAFTED BY P.N.S. 5/21/62

RECONNAISSANCE GEOLOGIC MAP

OF THE

300 LEVEL
HILLTOP MINE

TEXAS DISTRICT, LEMHI COUNTY, IDAHO



EXPLANATION

- OUTLINE OF WORKINGS
- 8225' SHAFT STATION SHOWING ELEVATION
- STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 55° STRIKE AND DIP OF BED
- 85° STRIKE AND DIP OF JOINT
- 45° STRIKE AND DIP OF CLEAVAGE
- 70° STRIKE AND DIP OF STRUCTURE THAT IS EITHER BEDDING OR CLEAVAGE; OTHER SIMILAR COMBINAIONS USED
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GEOLOGY BY P.N. SHOCKEY
SURVEYED BY HAMMOND-EVERLY ENGINEERING CO, BUTTE, MONTANA
DRAFTED BY P.N.S. 5/21/62