SUPPLEMENTAL REPORT

Re:

APPLICATION FOR FINANCIAL ASSISTANCE IN MINERALS EXPLORATION

HILLTOP MINE

(Silver-Gold)

TEXAS DISTRICT, LEMHI COUNTY, IDAHO

By

Clemens A. Lombardi

And

Arthur Lombardi

Philip N. Shockey
Salmon, Idaho
September 16, 1963

RECEIVED
SEP 24 1963
U.S. BUREAU OF MINES

SUMMARY

This supplement concerns only ITEM 5 - EXPLORATION WORK, and ITEM 7-ESTIMATE OF COSTS of the original application. Basic proposals of the original application remain unchanged, i.e., soil sampling followed by bulldozer trenching and shafting and drifting(or equivalent adit work) will explore broader tracts of the Hilltop Group, and crosscutting and drifting together with diamond drilling will explore specific targets on the 300 and 500 Levels of the Hilltop mine. But the surface area to be explored has been reduced considerably, and underground projects in the Hilltop mine are less ambitious. Total cost of all proposed work is reduced to $115,038.00.

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INTRODUCTORY LETTER

107 N. Hickory
Anaconda, Montana
September 16, 1963

Mr. D. R. MacLaren
Acting Field Officer
Office of Minerals Exploration
So. 157 Howard St.
Spokane 4, Washington

Dear Mr. MacLaren:

This report supersedes parts of our OME loan application submitted early this summer. Changes have been made to better fit proposed exploration to prevailing circumstance and thought. Information that you requested during your August field examination is provided.

We appreciate your past cooperation and hope for early execution of an equable contract. If we can be of further assistance in achieving this objective, please, let us know.

Sincerely,

Clemens A. Lombardi

Clemens A. Lombardi

Arthur Lombardi

Arthur Lombardi

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WASH.

ITEM 5. EXPLORATION WORK:

(a) Both surface and underground exploration projects are proposed. Soil sampling followed by bulldozer trenching and possible shafting with branch drifts and crosscuts(or equivalent adit work) will explore broader tracts of the Hillton Group. Concurrently in the Hillton mine itself diamond drilling and various kinds of underground excavation will further define local potential. With time, contract amendments will be proposed, if warranted, so that this and adjacent O&E work (OMI-6286) can be most fruitfully integrated.

[illegible]

Hillton Claims No. 5-12 and a mill site(see Plate I of Application) were staked by the applicants in the fall of 1962. Subsequently, "Red" Barnes, a neighbor to the Hillton mine, claimed prior right to some of the same ground. Consequently a claim conflict exists between the applicants and Barnes. Both parties seem to have some ownership justification in the area of conflict, and no quick resolution of differences is apparent. Therefore, much of the ground covered by Hillton claims No. 5-12 must be excluded from immediate consideration, because of ownership conflict.

Mr. Edward F. Rumpel of the U.S. Geological Survey, working out of Leadore, Idaho, in the course of regional work has done some areal mapping over terrane of current interest. Rumpel's map, a copy of which reportedly will be made available to OMI, shows over the higher numbered Hillton claims a more or less recrystallized and discarranged contact aureole of the Scmocrat stock and nearby hypabyssal rocks(see Plate I of Application). This aureole apparently has sterilized otherwise favorable terrane.

Thus, claim conflicts and igneous contact effects now restrict

proposed exploration work to only the following claims of the greater Hillton Group:

*Alex Stevens No. 2
*Rose Rud
Hillton No. 1
Hillton No. 2
Hillton No. 3
Hillton No. 4

* patented

See page 7 of the Application for additional property information.

SURFACE EXPLORATION

Phase 1. Geochemical Sampling:

The applicants propose to lay out the basic soil sample grid shown on Figure 15 of the Application, but restricted to the claims specified above. This grid is bounded on the northwest by outcrops of white quartzite(Ordovician, Kinnikinic) and on the remaining three sides by property lines. Soil samples will be taken at 50-foot intervals along northeasterly(N. 49° E. approximately) trending force lines 200 feet apart. A soil auger will be used to extract samples from a depth of about two feet. Samples will be analyzed for lead in ppm.; some 10% of the samples will be sent out for commercial check lead analyses. About 350 soil samples should suffice to reconnoiter the restricted Hillton Group, and another 500 samples should be adequate to detail anomalies found in reconnaissance. Some success in this soil-sampling program is virtually guaranteed by findings on a recent surface reconnaissance of Hillton ground and by results of unadjacent, very similar program(see current results of OTB-6286).

Phase 2. Bulldozer Trenching:

The strongest discrete anomalies outlined by soil sampling will merit further exploration. Bulldozer trenching is an excellent means

of achieving this objective over such unleached ore deposits as are being sought. Therefore, the applicants propose that up to 150 hours of D-8(or equivalent) bulldozer trenching be allocated to follow-up the soil-sampling program. Adequacy of such trenching is demonstrated by recent theoretical work on an adjacent property(see current results of [illegible]-6286).

WORK PROPOSED IN APPLICATION

Phase 1. Shafting And Drifting(Or Equivalent Adit Work)

If results of surface exploration are favorable, then the applicants propose to sink on two or three of the stronger showings to better define ore-shoot characteristics. And it may prove desirable to drift and crosscut from the proposed shafts. Accordingly, the applicants request that up to 300 feet of 5 ft. by 6 ft.(clear), single compartment, timbered shaft and 600 feet of 5 ft. by 7 ft.(clear) drift and crosscut be allocated to this application. Probably none of the proposed shafts will be deeper than 150 feet and no single drift will be longer than 200 feet.

It may develop, as on an adjacent property(see current results of OM-6286), that the lay of newly discovered mineralization dictates adit exploration, rather than shafting. In that event, the applicants propose to translate above shafting and related exploration into equivalent(dollar value) adit work.

Actual location and extent of all such proposed workings will be matters to be decided subsequently between the Office of Minerals Exploration and the applicants.

Phase 2. Exploration Of The Willton Mine Proper: 300 Level Exploration

During the summer of 1962 two horizontal x-ray diamond drill holes were cored on the 300 Level of the Willton Mine(see Fig. 6 of the application). The first hole, DDH No. 1, probed northerly along favorable beds and cut a typical mineralized section in the interval 107 ft.-120 ft.(see Table 1, below). DDH No. 2 was barren to 87 feet.

DEH No. 1 seems to have tested successfully the multiple-vein, wall-rock-controlled-shoot hypothesis originally postulated by the writer(see p. 13 et seq. of Supplemental Report No: [illegible]-6185). [illegible], incidentally, results of recent soil sampling and bulldozer trenching on an adjacent property([illegible]-62[illegible]) also tend to verify this hypothesis.

Table 1 is a partial log of DEH No. 1

TABLE 1.- PARTIAL LOG OF DEH NO. 1

Interval	Description	Sample	Assay oz. Ag	Au	% Pb	% Zn
107'-109'	Brecciated, silicified dolomite	core	0.40	Tr	0.05	Tr
109'-112'	Brecciated, silicified dolomite & brown & wht. breccia	core	0.30	Tr	Tr	Tr
112'-115'	Brown & white breccia of jasper w/iron sulfides	core	0.30	Tr	0.27	Tr
115'-120'	Silicified dolomite	core	not assayed			
117'-118'	Composite of above	sludge	0.05	Tr	0.16	Tr

Jasper, brown-and-white breccia, and silicified walls typify Hilltop-type mineralization(see pp. 15,16,17 of application). And where ore is absent, the Hilltop vein assays about as did core from DEH No. 1.[1] The No. 1 Ore Shoot in the area explored by this drill hole is truncated, so that high grade shoots along the vein have strike lengths less than 10 feet(see Figs. 10 & 12 of Application). There is slight chance of hitting such a small target, whose exact position is unknown, at a distance of more than 100 feet. But the veins along which such shoots occur are more or less continuous for hundreds of feet, and much evidence points to the conclusion that DEH No. 1 found another typical Hilltop vein and that high grade shoots may be within a few 10's of feet east and/or west along the newly discovered vein. If so, reserves of this

1. Compare Hole 1 assays with samples No. 21 and No. 23, Fig. 5 p. 22; samples No. 33 and No. 34, Fig. 6, p.23; and sample No. 46, Fig. 7, p.24 - all figure and page numbers referring to the application.

hypothetical, triparted(?) ore shoot should be similar to those of the virgin No. 1 Ore Shoot, i.e., about half the total production of the Hilltop mine.

Accordingly, the applicants propose that 120 feet of crosscut be allowed to explore along DDH No. 1 to the mineralized zone, and then that a total of 100 feet of drift be driven first easterly and then westerly along the new vein in search of inferred high grade shoots(see Fig. 6 of Application).

In a letter dated earlier this summer, OME stated that the exploration just proposed would have to be considered development work. How can this be, when no ore is yet known in the target area?

500 Level Exploration

During the summer of 1962, extension of the 500 Level drift a few 10's of feet easterly through the Idaho Fault found a modest shoot of ore(Fig. 1). Geologic relationships in this area are not abundantly clear, but available data presage the following conclusions:

(1) The southernmost drift of Figure 1 seems to have turned off north of the main Hilltop Vein 40 feet west of the Idaho Fault.

(2) The branch(northernmost) drift of Figure 1 seems to have followed a split from the main vein through the Idaho Fault, on the east side of which the branch vein is rotated but not much displaced otherwise; a small shoot of ore was found east of the fault, at the intersection of the branch vein and a narrow sequence(?) of favorable carbonate strata.

(3) Bedding(?) apparently is better developed easterly in these workings, and the most favorable thin-bedded-gray-brown-dolomite sequence(see p. 16 of Application) may lie a short distance farther to the east, beyond the indicated transition zone.

A few short drill holes, as shown on Figure 1, will be adequate for preliminary exploration of apparently favorable ground east

TABLE 2. NORMAL RATES OF PROGRESS AND COMPLETION TIMES FOR EACH TYPE OF EXPLORATION WORK

TYPE OF WORK	SET-UP TIME-DAYS(1)	DAILY RATE	TOTAL JOB	WORK DAYS (2)	TOTAL DAYS (1)plus(2)	WORK WEEKS (5 day)	YEARS (52 WEEKS)
Surface Exploration							
Phase 1. Geochemical Sampling	8	50 samples/ day	850 samples	17	25	5	0.096
Phase 2. Bulldozer Trenching	3	8 hrs.	150	18.75	21.75	4.4	0.085
Underground Exploration							
Phase 1. Shafting And	30	3ft./shift	300 ft.	100	130	26.0	0.50
Drifting	0	4ft./shift	600 ft.	150	150	30.0	0.58
Phase 2. Exploration of The Hilltop Mine							
300 Level Exploration Crosscut And Drift	20	4 ft./shift	220 ft.	55	75	15.0	0.29
500 Level Exploration Diamond drilling	20	20ft./shift	450 ft. (max)	22.5	42.5	8.5	0.16
Crosscut And Drift	15	4ft./shift	300 ft.	75	90	18	0.35

of the Idaho Fault. The hole to the south should find not only the favorable thin-bedded-gray-brown-dolomite sequence, but also the main Hilltop Vein(Fig. 1). In the event of failure of this southerly drill hole, two additional holes are proposed to more or less exhaust immediate(close) ore-finding possibilities east of the Idaho Fault on the 500 Level(Fig. 1). Because x-Ray drill holes proved to be mechanically adequate in earlier drilling, the applicants propose to continue with x-Ray drilling.

Success in this 500 Level drilling program will be followed by appropriate crosscutting, drifting, and raising, none of which can be planned specifically at this time and any or all of which will materialize only after mutual agreement between the Office of Minerals Exploration and the applicants. For the sake of quantitative expression and a degree of definiteness, the applicants request that up to 200 feet of 5 ft. by 7 ft.(clear)crosscut and drift(or equivalent dollar value crosscut drift, and raise) be reserved to follow-up the 500 Level diamond drill program.

(b) Access roads will have to be built to shaft(or adit) sites of Phase 1, Underground Exploration. Inasmuch as whereabouts of these roads is problematical, suffice it to state now that up to one mile of access road(14 ft. wide over gentle grades) will be required to complete indicated projects.

(c) If an OMT contract is executed, work on this program will start immediately. Normal rates of progress and completion times for each type of work are shown in Table 2. Accordingly, some 18 months(Surface Exploration plus Phase 1, Underground Exploration) would be required to complete all proposed work.

ITEM 7. ESTIMATE OF COSTS:

SURFACE EXPLORATION

Phase 1. Geochemical Sampling(850 soil samples)

(a) Independent Contracts

None

(b) Personal Services (all available locally)	Rate/Day	Days Required	Total Cost	Cost/Sample
Geologist-Engineer-Supervisor	$37.50	25	$937.50	$1.10
2 Assistants	20.00/man	17	340.00	0.40
			$1277.50	$1.50

(c) Operating Materials and Supplies	Unit Cost	Quantity	Total Cost	Cost/Sample
300-foot chain	$50.00	1	$ 50.00	$0.06
Stakes and pickets	0.05	850	42.50	0.05
Flagging	1.00/roll	4 rolls	4.00	0.01
Soil auger	27.00	1	27.00	0.03
Shovel	6.00	1	6.00	0.01
Pick	8.00	1	8.00	0.01
Axes	6.00	2	12.00	0.01
Sample bags-plastic	0.03	850	25.50	0.03
Sample storage boxes	0.50	50	25.00	0.03
Sampling appartus and reagents	0.50/sample	850	425.00	0.50
Drafting supplies	various	various	10.00	0.01
			$635.00	$0.75

(d) Operating Equipment	Cost/Day	Days Required	Total Cost	Cost/Sample
Jeep-4wd.wagon(rental)	$10.00	25	$250.00	$0.29
Transit(rental)	3.00	17	51.00	0.06
			$301.00	$0.35

(e) Initial Rehabilitation And Repairs

None

(f) New Buildings, Fixtures
Installations
None

(g) Miscellaneous	UNIT COST	Quantity	Total Cost	Cost/Sample
Taxes and Insurance	15% of payroll		$191.50	$0.23
Commercial analyses for trace Pb insoil samples	$1.50/sample	85	$127.50	0.15
Map reproductions	1.00	10	10.00	0.01
Sample shipping chgs.	various	various	20.00	0.02
			$349.00	$0.41
	Phase 1. TOTAL: 850 Soil Samples		$2562.50	$3.02/sample

Phase 2. Bulldozer Trenching(150 hours, D-8 or equivalent

(a) Independent Contracts	Unit Cost	Quantity	Total Cost	Cost/hr
D-8 or equivalent bulldozer	$20.00/hr	150 hrs.	$3000.00	$20.00

(b) Personal Services (all available locally)	Rate/Day	Days Required	Total Cost	Cost/hr
Geologist-Engineer-Supervisor	$37.50	22	$ 825.00	$ 5.50

(c) Operating Materials and Supplies	Unit Cost	Quantity	Total Cost	Cost/hr
Sample bags-canvas	$ 0.25	100	$ 25.00	$ 0.17
Drafting supplies	various	various	$ 10.00	0.07
			$ 35.00	$ 0.24

(d) Operating Equipment	Cost/Day	Days Required	Total Cost	Cost/hr
Jeep,4wd, wagon	$10.00	19	$ 190.00	$ 1.27

(e) Initial Rehabilitation and Repairs
None

(f) New Buildings,Fixtures
Installations
None

(g) Miscellaneous	Unit Cost	Quantity	Total Cost	Cost/Hr
Taxes and Insurance	15% of payroll		$123.80	$0.83
Assays for Ag,Au,Pb,Zn	$8.50/sample	100 samples	850.00	5.66
Map reproductions	1.00	10	10.00	0.07
Sample shipping chgs.	various	various	20.00	0.13
			$1003.00	$6.69

Phase 2.TOTAL:150 Hrs. Bull-cozing $5053.00 $33.70/hr

UNDERGROUND EXPLORATION

Phase 1. Shafting(300 ft. 5ft. x 6 ft. shaft)

(a) Independent Contracts	Unit Cost	Quantity	Total Cost	Cost/foot
D-8 or Equivalent bulldozer build 1 mile access rd, build 2 or 3 collar sites, prepare 2 or 3 dump areas	$20.00/hr	50 hrs.	$1000.00	$3.33

(b) Personal Services(all available locally)	Rate/Day	Days Required	Total Cost	Cost/Foot
Geologist-Engineer	$37.50	130 days	$4870.00	$6.24
2 Miners	22.50/man	100	4500.00	15.00
1 Surface-Hoist man	20.00	100	2000.00	6.67
Book & timekeeper	18.00	25	450.00	1.50
			$11820.00	$39.42

(c) Operating Materials And Supplies	Unit Cost	Quantity	Total Cost	Cost/Foot
Fuel and lube	$ 3.50/ft	300 ft.	$1050.00	$3.50
Track-25 lb rail(incl dump trk)	5.50/ft	400 ft	2200.00	7.33
Fish plates	1.00/pr	40 pr	40.00	0.13
Track spikes	0.10 ea	700	70.00	0.23
2" air line	0.75/ft	250 ft.	187.50	0.62
Air hose	0.90/ft	100 ft	90.00	0.30
3/4" water line	0.40/ft	250 ft	100.00	0.33
Water hose	0.75/ft	100 ft	75.00	0.25
Bits	0.25/ft	300 ft	75.00	0.25

	Unit Cost	Quantity	Total Cost	Cost/Foot
Steel	$0.25/ft	300 ft	$ 75.00	$0.25
Powder	1.00/ft	300 ft	300.00	1.00
Fuse	0.25/ft	300 ft	75.00	0.25
Caps	0.25/ft	300 ft	75.00	0.25
Connectors	0.25/ft	300 ft	75.00	0.25
Timber and lagging	15.00/set	70 sets	1050.00	3.50
Wedges	0.05 ea	700	35.00	0.12
Miscellaneous timber	various	various	100.00	0.33
Spikes, and nails, small hardware	various	various	50.00	0.17
Hand and shop tools	various	various	300.00	1.00
Cap lamps and chargers	50.00/set	6 sets	300.00	1.00
First aid equipment	various	various	50.00	0.17
Sample bags(canvas)	0.25	60	15.00	0.05
Office supplies	various	various	25.00	0.08
			$6412.50	$21.36

(d) Operating Equipment(to be acquired as indicated: O-operator, fair value shown;R-rental,P-purchase,RP-rental purchase)

	Quantity	Unit or Rental Cost	Rental Period	Total Cost	Cost/Foot
Jeep,4wd, wagon(RP)	1	$10.00/day	130 days	$1300.00	$ 4.33
Service Truck-4wd,6x6(RP)	1	10.00/day	130 days	1300.00	4.33
Portable head-frame hoist 5T(RP)	1	10.00/day	130 days	1300.00	4.33
310 cfm portalbe air compressor (RP)	1	15.00/day	100 days	1500.00	5.00
Receiver tank,appx 100 cu ft(P)	1	250.00	-	250.00	0.83
Water tank,appx 500 gal(P)	1	250.00	-	250.00	0.83
5KW light plant(O)	1	250.00	-	250.00	0.83
Skip bucket, 20 cu ft(O)	1	300.00	-	300.00	1.00
Mine car-27 cu ft,side dump 18" (O)	1	100.00	-	100.00	0.33
Rock drill(O)	1	1000.00	-	1000.00	3.33
Sump pump,say 300 gpm(P)	1	250.00	-	250.00	0.83
Chain saw,Homelite zip(P)	1	250.00	-	250.00	0.83
				$8050.00	$26.80

(e) Initial Rehabilitation and Repairs
None

(f) New Buildings, Fixtures, Installations	Size	Quantity	Total Cost	Cost/Foot
Compressor-change house on skids:2/benches and oil stove	12' X 20'	1	$800.00	$2.66
Install head-frame-hoist	5-ton	1(poss.3 instl)	600.00	2.00
Install receiver tank	100 cu ft	1 " " ")	300.00	1.00
Install water tank	500 gal.	1 " " "	300.00	1.00
			$2000.00	$6.66

(g) Miscellaneous	Unit Cost	Quantity	Total Cost	Cost/Foot
Repair operating equip.	15% of total cost	-	$1209.00	$4.03
Taxes and ins.	15% of payroll	-	1772.00	5.91
Assays Ag,Au,Pb,Zn	8.50/sample	60	510.00	1.70
Map reproductions	various	various	30.00	0.10
Freight and shipping chgs.	various	various	600.00	2.00
			$4121.00	$13.74

TOTAL COST 300 Feet 5 ft. x 6 ft. shaft $33403.50 $111.30/ft

Drift '600 feet 5 ft. x 7 ft)

(a) Independent Contracts
None

(b) Personal Services(all available locally)	Rate/Day	Days Required	Total Cost	Cost/Foot
Geologist-Engineer	$37.50	150	$5620.00	$9.37
2 Miners	22.50/man	150	6750.00	11.25
1 Surface-hoist man	20.00	150	3000.00	5.00
1 Book and timekeeper	18.00	40	720.00	1.20
			$16090.00	$26.82

(c)Operating Materials and Supplies	Unit Cost	Quantity	Total Cost	Cost/Foot
Fuel and lube	$ 3.50/ft	600 ft	$ 2100.00	$3.50
Track-25 lb rail	5.50/ft	600 ft	3300.00	5.50
Fish plates	1.00/pr	60 pr	60.00	0.10
Ties	0.20 ea	200	40.00	0.07
Track spikes	0.10 ea	800	80.00	0.13
2" air line	0.75/ft	500 ft	375.00	0.63
3/4" water line	0.40/ft	500 ft	200.00	0.33

(c) Operating Materials and Supplies Cont'd.

	Unit Cost	Quantity	Total Cost	Cost/Foot
12" vent line	$1.00/ft	200 ft	$200.00	$0.33
Bits	0.25/ft	600 ft	150.00	0.25
Steel	0.25/ft	600 ft	150.00	0.25
Powder	1.00/ft	600 ft	600.00	1.00
Fuse	0.25/ft	600 ft	150.00	0.25
Caps	0.25/ft	600 ft	150.00	0.25
Connectors	0.25/ft	600 ft	150.00	00.25
Timber and lagging	15.00/set	12 sets	180.00	0.30
Wedges	0.05 ea	100	5.00	0.01
Miscellaneous timber	various	various	100.00	0.17
Spikes and nails	various	various	50.00	0.08
Sample bags(canvas)	0.25 ea	60	15.00	0.03
Office supplies	various	various	25.00	0.04
			$8080.00	$13.47

(d) Operating Equipment(to be acquired as ind.:R-rental, P-purchase,RP-rental purchase)

	Quantity	Unit or Rental Cost	Rental Period	Total Cost	Cost/Foot
Jeep,4wd-wagon(RP)	1	$10.00/day	150 days	$1500.00	$2.50
Service truck,4wd 6x6(RP)	1	10.00/day	150 days	1500.00	2.50
Portable head-frame-hoist 5T(RP)	1	12.00/day	150 days	1800.00	3.00
310 cfm port. air compressorRP	1	15.00/day	150 days	2250.00	3.75
Mucking machine,Enco 12B(R)	1	10.00/day	150 days	1500.00	2.50
Mine car,27 cu ft side dump(P)	1	200.00 ea	-	200.00	0.33
Air vent fan & motor underground(P)	1	400.00 ea	-	400.00 M	0.66
				$9150.00	$15.24

(e) Initial Rehabilitation and Repairs
None

(f) New Buildings,Fixtures,Installations

	Size	Quantity	Total Cost&	Cost/Foot
Skip pockets	suitable	poss. 3	$600.00	$1.00

(g) Miscellaneous	Unit Cost	Quantity	Total Cost	Cost/Foot
Repair operating equip.	15% of total cost	-	$1372.00	$2.29
Taxes & insurance	15% of payroll	-	2415.00	4.02
Map reproductions	various	various	30.00	0.05
Assays-Ag,Au,Pb,Zn	$8.50/sample	100	850.00	1.42
Freight & shipping chgs.	various	various	300.00	0.50
			$4967.00	$8.28
TOTAL COST 600 Feet 5 ft. x 7 ft. Drift			$38887.00	$64.80

Phase 2. Exploration Of The Hilltop Mine
300 Level Exploration - 220 Feet 5 ft. x 7 ft. crosscut and Drift

(a) Independent Contracts
None

(b) Personal Services(all available locally)	Rate/Day	Days Required	Total Cost	Cost/Foot
Geologist-Engineer(half-time)	$37.50 / 2	75	$1408.00	$6.39
2 Miners	22.50/man	55	2477.00	11.25
1 surface-hoist man	20.00	55	1100.00	5.00
Book & timekeeper	18.00	10	180.00	0.82
			$5165.00	$23.46

(c) Operating Materials and Supplies	Unit Cost	Quantity	Total Cost	Cost/Foot
Fuel and lube	$3.50/ft	220 ft	$770.00	$3.50
Track-25 lb rail	5.50/ft	220 ft	1211.00	5.50
Fish plates	1.00/pr	30 pr	30.00	0.14
Ties	0.20 ea	80	16.00	0.07
Track spikes	0.10 ea	320	32.00	0.15
2" air line	0.75/ft	200 ft	150.00	0.68
Air hose	0.75/ft	100 ft	75.00	0.34
3/4" water line	0.50/ft	200 ft	100.00	0.45
Water hose	0.75/ft	100 ft	75.00	0.34
Bits	0.25/ft	220 ft	55.00	0.25
Steel	0.25/ft	220 ft	55.00	0.25

(c)Operating Materials(cont'd.	Unit Cost	Quantity	Total Cost	Cost/Foot
Powder	$1.00/ft	220 ft	$220.00	$1.00
Fuse	0.25/ft	220 ft	55.00	0.25
Caps	0.25/ft	220 ft	55.00	0.25
Connectors	0.25/ft	220 ft	55.00	0.25
Timber and lagging	15.00/set	4 sets	60.00	0.27
Wedges	0.05 ea	40	2.00	0.01
Miscellaneous timber	various	various	22.00	0.10
Spikes and nails	various	various	5.00	0.02
Sample bags(canvas)	0.25 ea	20	5.00	0.02
Drafting supplies	various	various	10.00	0.05
			$3058.00	$13.89

(d)Operating Equipment(to be acquired as ind:)O-furnished by opr.fair value shown; R-rental, P-purchase;RP°rental purchase)	Quantity	Unit or Rental Cost	Rental Period	Total Cost	Cost/Foot
Jeep,4wd wagon(RP)(half time)	1	$10.00/day / 2	75 days	$375.00	$1.70
Service Trk-4wd 6x6(RP)half time	1	10.00/day / 2	75 days	375.00	1.70
Head frame-hoist(O)(half time)	1	5.00/day / 2	75 days	187.50	0.85
310 dfm portable air compressor (O)(half time)	1	10.00/day / 2	55 days	275.00	1.25
Mucking machine,Enco 12B(R)	1	10.00/day	55 days	550.00	2.50
Mine car, 27 cu ft end dump(P)	1	100.00	-	100.00	0.45
				$1862.50	$ 8.45

(e) Initial Rehabilitiation & Repairs	Unit Cost	Quantity	Total Cost	Cost/Foot
Repair & make safe manway to 300 Level	$3.00/ft	300 ft	$900.00	$4.09

(f) New Buildings,Fixtures Installations

None

(g) Miscellaneous	Unit Cost	Quantity	Total Cost	Cost/Foot
Repair operating equipment	15% of total cost	-	$279.50	$1.27
Taxes and insurance	15% of payroll	-	775.00	3.52
Assays,Ag,Au,Pb,Zn	$8.50/sample	30	255.00	1.16
Map reproductions	various	various	20.00	0.09
Freight and shipping chgs	various	various	100.00	0.45
			$1429.50	$6.49

TOTAL COST: 225 feet Crosscut And Drift $12415.00 $56.43

500 Level Exploration - 450 Feet(Max) x-Ray Diamond Drill Hole

(a) Independent Contracts	Unit Cost	Quantity	Total Cost	Cost/Foot
X-Ray diamond drill hole-incl. all extra direct drilling costs	$7.50/ft	450 ft	$3375.00	$7.50

(b) Personal Services	Rate/Day	Days Required	Total Cost	Cost/Foot
Geologist-Engineer(half-time)	$37.50 / 2	43	$806.00	$1.79

(c) Operating Materials and Supplies
None

(d) Operating Equipment
None

(e) Initial Rehabilitation and Repairs	Unit Cost	Quantity	Total Cost	Cost/Foot
Repair and make safe manway from 300 Level to 500 Level	$3.00/ft	200 ft.	$600.00	$1.33

(f) New Buildings, Fixtures Installations
None

(g) Miscellaneous	Unit Cost	Quantity	Total Cost	Cost/Foot
Taxes and insurance	15% of payroll	-	$121.00	$0.27
Assays:Ag,Au,Pb,Zn	$8.50/ sample	100 samples	850.00	1.89
Sample shipping chgs	various	various	25.00	0.06
Map reproductions	various	various	10.00	0.02
			$1006.00	$2.24

TOTAL COST: 450 feet X-Ray Diamond Drill Hole	$5787.00	$12.84/ft

500 LEVEL EXPLORATION-300 Feet 5ft. x 7 ft. Crosscut and Drift	Total Cost	Cost/Foot
As itemized for similar work on 300 Level, see pages	$16929.00	$56.43

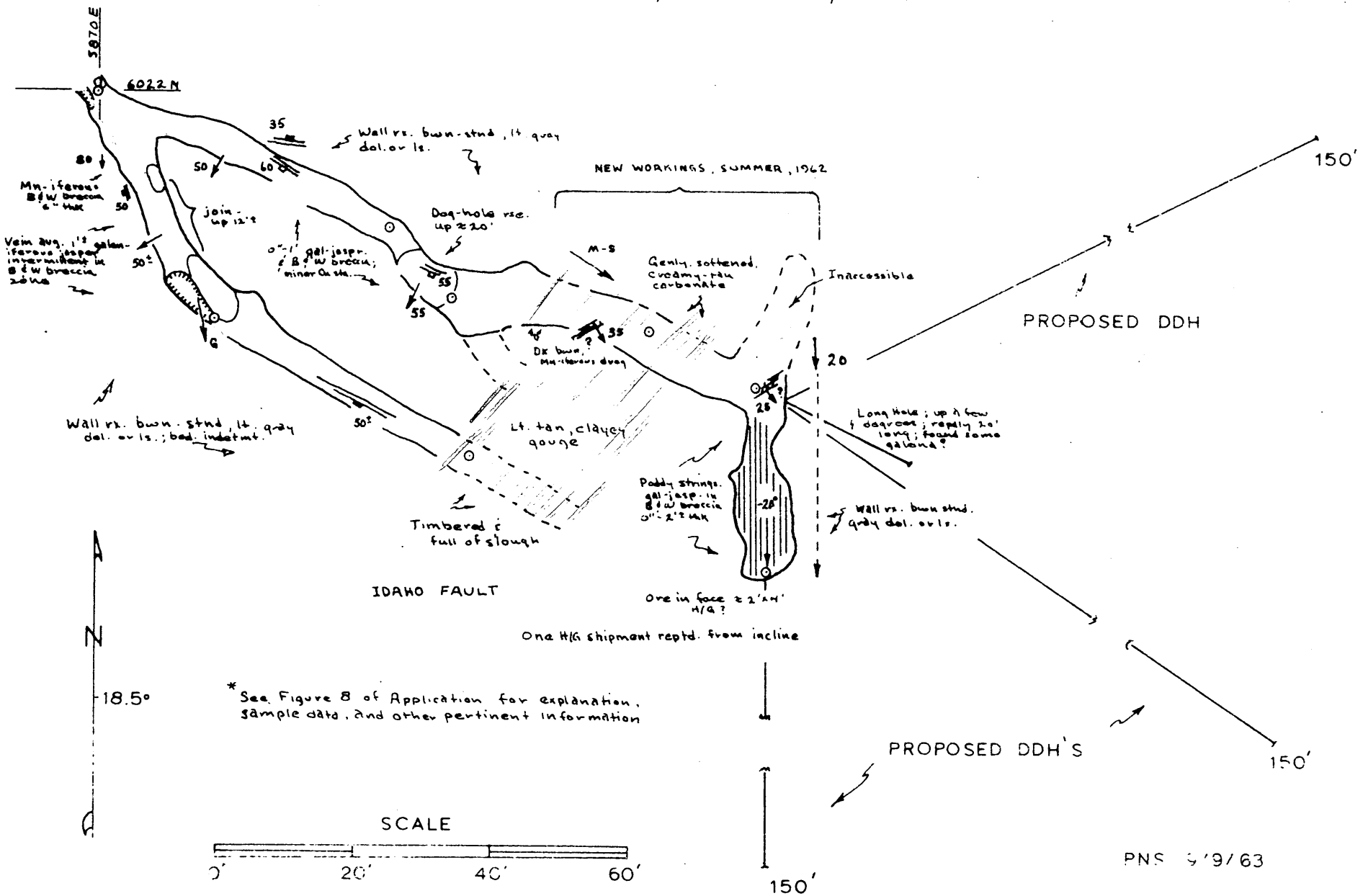
SUMMARY OF COST ESTIMATE

SURFACE EXPLORATION	Quantity	Total Cost	Unit Cost
Phase 1. Geochemical Sampling	850 samples	$2,562.50	$3.02/sample
Phase 2. Bulldozer Trenching	150 hrs	5,053.80	33.70/hr
TOTAL SURFACE EXPLORATION		$7,616.30	
UNDERGROUND EXPLORATION			
Phase 1. Shafting And Drifting	300 feet	$33,403.50	$111.30/ft
	600 feet	38,887.00	64.80/ft
Phase 2. Hilltop Exploration			
300 Level			
Crosscutting And Drifting	220 feet	12,415.00	56.43/ft
500 Level			
Diamond Drilling	450 feet	5,787.00	12.84/ft
Crosscutting And Drifting	300 feet	16,929.00	56.43/ft
TOTAL UNDERGROUND EXPLORATION		$107,421.50	
TOTAL COST ALL PROJECTS		$115,038.00	

SOUTHEAST END, 500 LEVEL*

HILLTOP MINE

TEXAS DISTRICT, LEMHI COUNTY, IDAHO



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DATE	INITIALS	CODE

APPLICATION FOR FINANCIAL ASSISTANCE IN MINERALS EXPLORATION

HILLTOP MINE

(Silver-Gold)

TEXAS DISTRICT, LEMHI COUNTY IDAHO

By

Clemens A. Lombardi

And

Arthur Lombardi

Philip N. Shockey
Salmon, Idaho
June 19, 1963

SUMMARY

The Hilltop Group is in Texas Mining District, which has the largest and highest grade production of any district in Lemhi County, Idaho. Moreover, the Hilltop and Jumbo mines have produced at least 11,000 tons of ore containing about 14 ounces silver and 0.2 ounces gold per ton, together with important amounts of lead and zinc. 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 structurally and stratigriphically. Exploration in the Hilltop mine during the summer and fall of 1962 tends to substantiate these structural and stratigraphic controls.

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. Soil sampling, bulldozer trenching, shafting, drifting, crosscutting, and diamond drilling are involved. Estimated total cost of all projects is $301,198.00.

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ITEM I. FINANCIAL ELIGIBILITY:

(a) Pages 3 and 5 of this application are copies of letters recently written to two different banking institutions to obtain a loan to explore the Hilltop Group. Pages 4 and 6 are refusal letters from these two institutions.

(b) Not applicable.

(c) The applicants will furnish their share of exploration costs in: (1) cash, (2) operating equipment, materials, and supplies, and (3) personal services.

Clemens A. Lombardi
107 N. Hickory
Anaconda, Montana

107 N. Hickory
Anaconda, Montana
June 27, 1962

Idaho First National Bank
Salmon Branch
Salmon, Idaho

Gentlemen:

Preliminary estimates based on recent geologic study show that our Hilltop Mine and adjoining claims(Texas District, Lemhi County, Idaho) merit various kinds of exploration work totalling $150,000 in cost.

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

Sincerely,

Clemens A. Lombardi
Arthur Lombardi

Clemens A. Lombardi
107 N. Hickory
Anaconda, Montana

SALMON OFFICE

The Idaho First National Bank

ESTABLISHED 1907

SALMON, IDAHO

June 18, 1963

Mr. Clemens A. Lombardi &
Arthur Lombardi
c/o Philip Shockey
Salmon, Idaho

Gentlemen:

With reference to your letter dated June 17, 1963, this is to advise, we are not in a position to grant you a loan for for exploratory purposes such as you have asked for as it is against the policy of our loaning committee and it is not likely in the foreseeable future where this policy would be changed.

Our suggestion would be that you try a government agency, that you are no doubt acquainted with, that would very likely act more kindly towards this request.

Yours very truly,

W. O. Ferrier
Manager

WOF:ar

Clemens A. Lombardi
107 No. Hickory
Anaconda, Mont.

107 N. Hickory
Anaconda, Montana
June 17, 1963

Custer County Bank
Challis, Idaho

Gentlemen:

Preliminary estimates based on recent geologic study show that our Hilltop mine and adjoining claims(Texas District, Lemhi County, Idaho) merit various kinds of exploration work totalling $150,000 in cost.

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

Sincerely,

Clemens A. Lombardi
Arthur Lombardi

Clemens A. Lombardi
107 N. Hickory
Anaconda, Montana

SETH BURSTEDT, PRESIDENT
N. W. HANSEN, VICE-PRESIDENT
FRANK BURSTEDT, EXEC. VICE-PRES.
ADRIAN BURSTEDT, CASHIER
MARY MEYERS, ASST. CASHIER

Custer County Bank

92-207

CAPITAL AND SURPLUS $150,000.00

Challis, Idaho

6-18-63

Clemens A. Lombardi
Arthur Lombardi
107 N. Hickory
Anaconda, Montana

Gentlemen:

We do not lend money for exploration work on mines, so must refuse your request for $150,000.00 to be used on your Hilltop mine and adjoining claims in Lemhi County, Idaho

Very truly yours,

Frank Burstedt

Frank Burstedt

Clemens A. Lombardi
107 N. Hickory
Anaconda, Montana

ITEM 2. APPLICANTS' RIGHTS IN LAND:

(a) The applicants own outright all of the land on which exploration work is proposed. There are no encumbrances on this land.

(b) The Hilltop mine is in Texas District, Lemhi County, Idaho(Fig. 1). More specifically, land involved lies in the unsurveyed western part of Sec. 1 and the eastern part of Sec. 2, R. 26 E., T. 13 N., Boise Merdian.

Two patented and 13 unpatented claims comprise the Hilltop Group(Pl. I). These 15 claims would be liable to Government royalty and liens. Records in the Lemhi County Courthouse, Salmon, Idaho, list pertinent claims as shown in Table 1.

TABLE 1. PERTINENT CLAIMS BY BOOK AND PAGE NUMBER

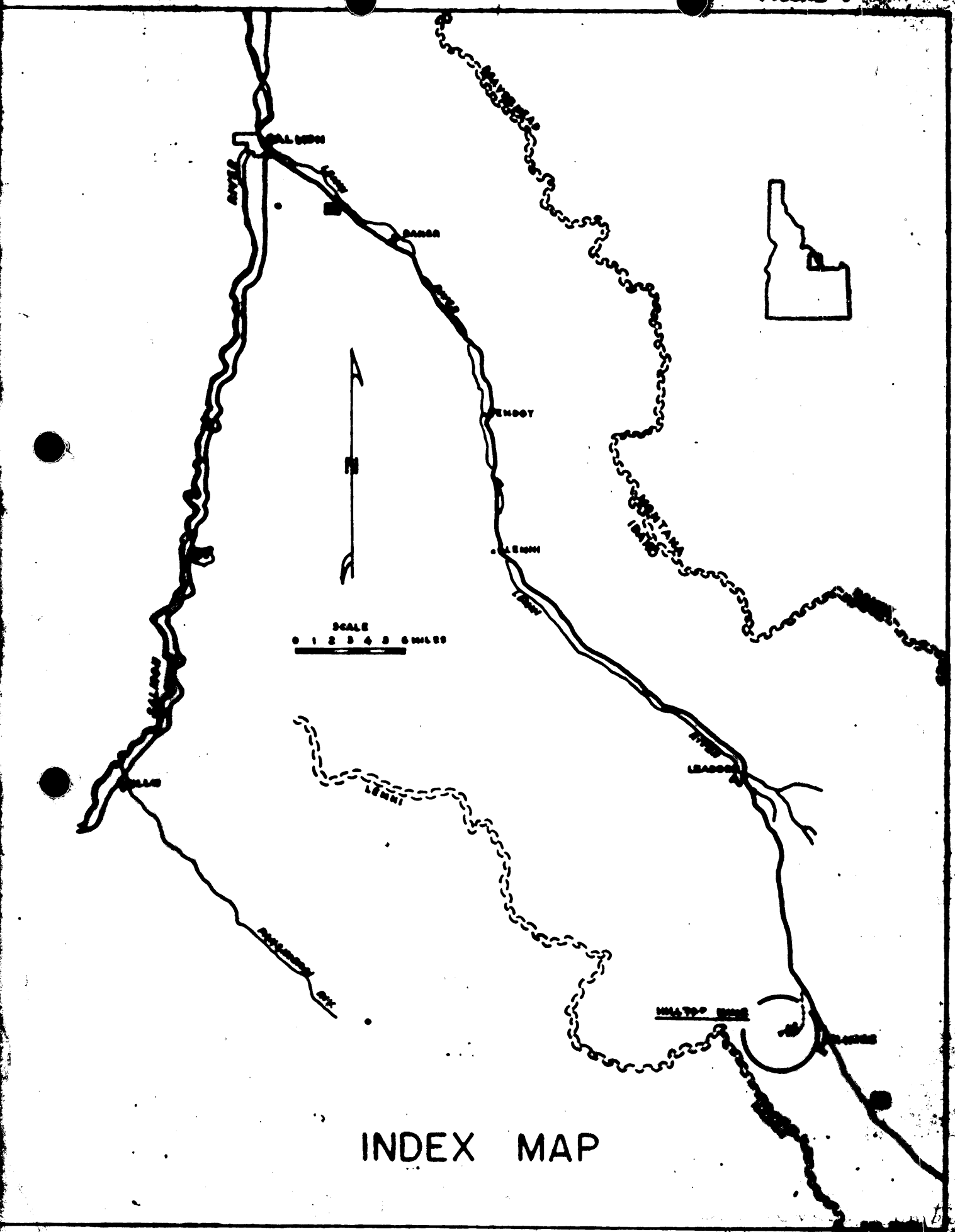
PATENTED CLAIMS	SURVEY NO.	BOOK NO.	PAGE NO.
Alex Stevens No. 2	3198	30	78
Rose Bud	1680	R	72

UNPATENTED CLAIMS	BOOK NO.	PAGE NO.
Hilltop No. 1	3	39
Hilltop No. 2	3	40
Hilltop No. 3	3	41
Hilltop No. 4	3	42
Hilltop No. 5	10	527
Hilltop No. 6	10	527
Hilltop No. 7	10	528
Hilltop No. 8	10	528
Hilltop No. 9	10	529
Hilltop No. 10	10	529
Hilltop No. 11	10	530
Hilltop No. 12	10	530
Mill Site	10	531

Earlier, the Hilltop Group included only the Alex Stevens, Rosebud, and Hilltop No. 1-4 claims. Now, all of the claims listed in Table 1 are included in the Greater Hilltop Group.

(c) Not applicable.

Clemews A. Lombardi
107 N. Hickory
Anaconda, Montana



INDEX MAP

Clemens H. Lo
102 N. Hickory
Anaconda

ITEM 3. PHYSICAL DESCRIPTION:

(a) High grade lead-silver lodes of the Texas district were discovered in the early 1880's(Umpleby, 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 Hilltop area is marked by several score such workings, some of 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 510 feet deep on a 60° to 70° west-southwesterly incline. The collar is at an elevation of 8380 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.[1] Figures 4

1. During the summer of 1962 two x-Ray diamond drill holes probed favorable ground north and south of No. 1 Ore Shoot on the 300 Level(Fig. 6) and the 500 Level was extended easterly through the Idaho fault to discover a modest shoot of ore(Fig. 8).

Clemens A. Lombardi
107 N. Hickory
Anaconda, Montana

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).

Production facilities at the Hilltop mine include: (1) an adequate but dry camp, (2) a surface plant consisting of a hoisthouse, 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 applicants 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. During the summer of 1962 two X-Ray diamond drill holes totalling 207 feet in length, probed favorable ground north and south of No. 1 Ore Shoot on the 300 Level. And the 500 Level was extended about 30 feet easterly through the Idaho fault to discover a modest shoot of ore, from which a 40-ton shipment was made.

(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. In 1961 two truck loads of crude ore totalling 30 tons averaged 1.06 oz. Au, 22.90% oz. Ag, 0.60% Cu, 22.8% Pb, and 12.88% Zn.[1] A 40-ton shipment in 1962 reportedly netted about $1,000.00.[1] Also, the Alex Stevens property, which subsequently became the Hilltop mine, produced

1. Pertinent smelter settlement sheets available upon request.

Clemens A. Lombard
107 N. Alsakery
Anaconda Montana

98 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.108) 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 0.06 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 or near 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, because: (1) some of the ore probably was shipped before Government record-keeping started in 1901, (2) the applicants do 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 7000N.-7300E., 7500N.-8400E., 8000N.-7600E. in Plate I.

(d) By strict definition there is little or no ore remaining in the Hilltop mine. However, this is not to say that strongly metallized 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):

Clemens A. Lombardi
107 No. Hickory
Anaconda, Montana

Avg. Wdth.	Wtd. Avg. Assay		
1.27 feet	21.0 oz. Ag/T	21.50% Pb	8.18% Zn

Based on the 1961 crude-ore shipment(p. 10), which had comparable Ag-Pb-Zn values, these channel samples probably also averaged about 1 oz. Au per ton. Thus, better unmined 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 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 "leasers" left the rock in the mine, and (2) it has not been possible to interest new "leasers". 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 application (p. 13-18). 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.10). 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.

Clemens A. Lombardi
107 No. Hickory
Anaconda, Montana

(e) Areal geologic maps of the Texas 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 Hilltoptarea 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 those 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, the axis of which 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 mineral-

Clemens A. Lombardi
107 No. Hickory
Anaconda Montana

ing 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 igneous mass(Plate I, circa 9000N.-10000E.). This stock is medium to coarse grained, somewhat porphyritic, light-reddish-orange weathering granodiorite(field termonology) with differientiated 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.

Clemens A. Lombardi
107 No Hickory
Anaconda, Montana

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 Latest Out 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 Democrat 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 repalcement 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 metasome 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

Clemens A. Lombardi
107 No. Hickory
Missoula, Montana

deposited under less clearly controlled conditions of replacement.

In the Hilltop mine one 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 seem to become longer and narrower in plan view(Figs. 4-12). Presumably this is because the metasome 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

Clemens D. Lombardi
107 No Hickory
Anaconda, Montana

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 ITEM 3 (c), p. 10-11). Figures 2 and 3 show roughly the following value changes in depth:

Silver	Lead	Zinc	$/T
Possible slight decrease	Possible slight increase	Strong increase	Apparently unchanged

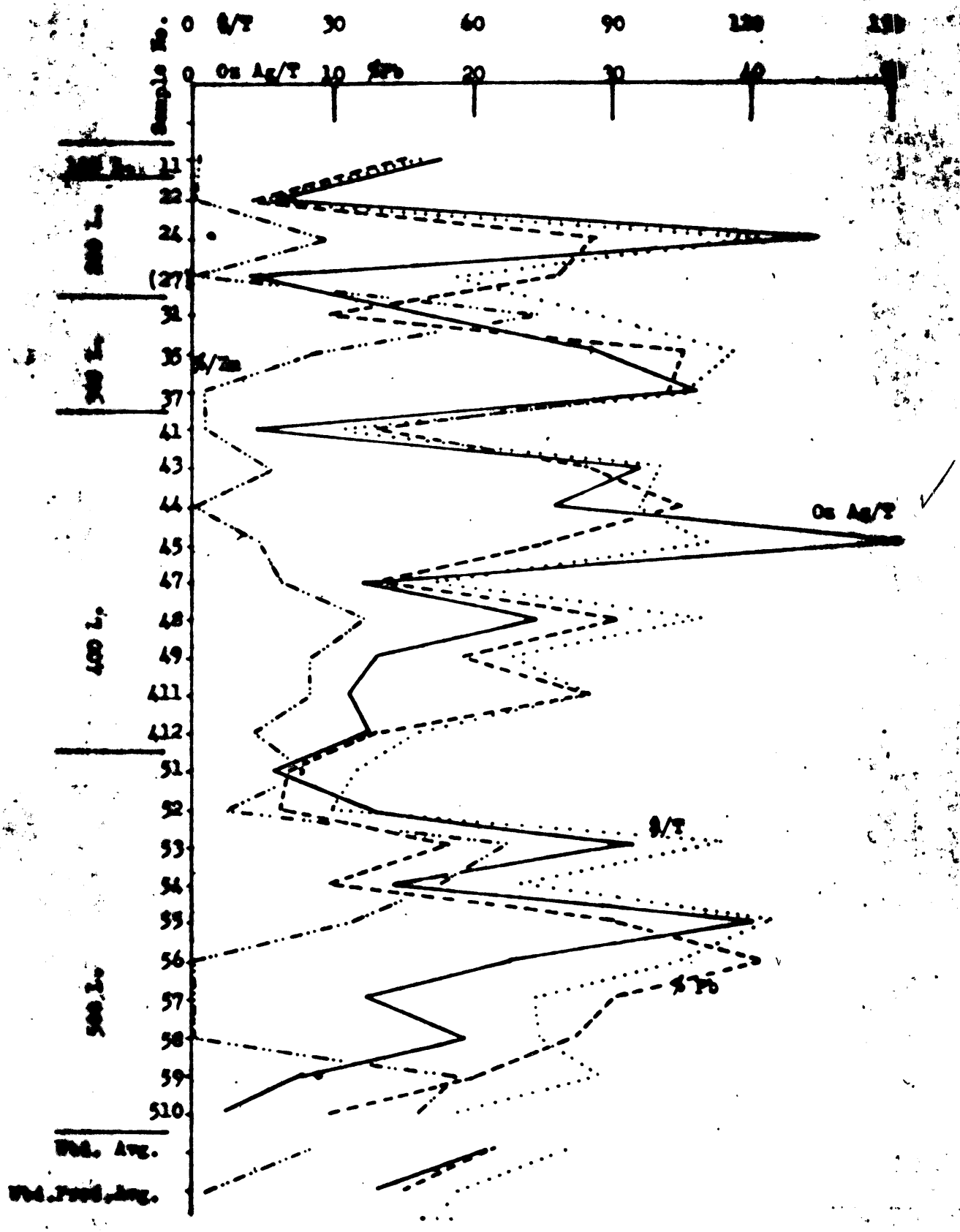
More than anything else these changes reflect decreasing oxidation with depth. The Jumbo workings, which have the deepest(elevation-wise) and least oxidized ore exposures in the area to be explored, show that there is no reason to suspect unfavorable value changes within the depth range under consideration(p. 11 and Plate I).

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

(f) According to Ross 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 7000N.-7300E., Plate I) bearing high grade lead-silver ore shoots crop out in or near 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

Clemens Lombardi
107 No Hickory
Anaconda, Montana



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

Clemens Lombardi
107 No Hickory
Anaconda

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 as well as elsewhere in the district(Umpleby, 1913, p.89-109). Presence of high grade typical ore in the deep(elevation-wise) Jumbo workings(p.10 and 17) tends to prove that strong metallization extends to and below the depth range of proposed exploration.

Intelligent exploration hardly can fail to increase ore reserves of the Hilltop group.

(g) Two complete copies of this application have been submitted. These need not be returned.

Clemens H. Lombardi
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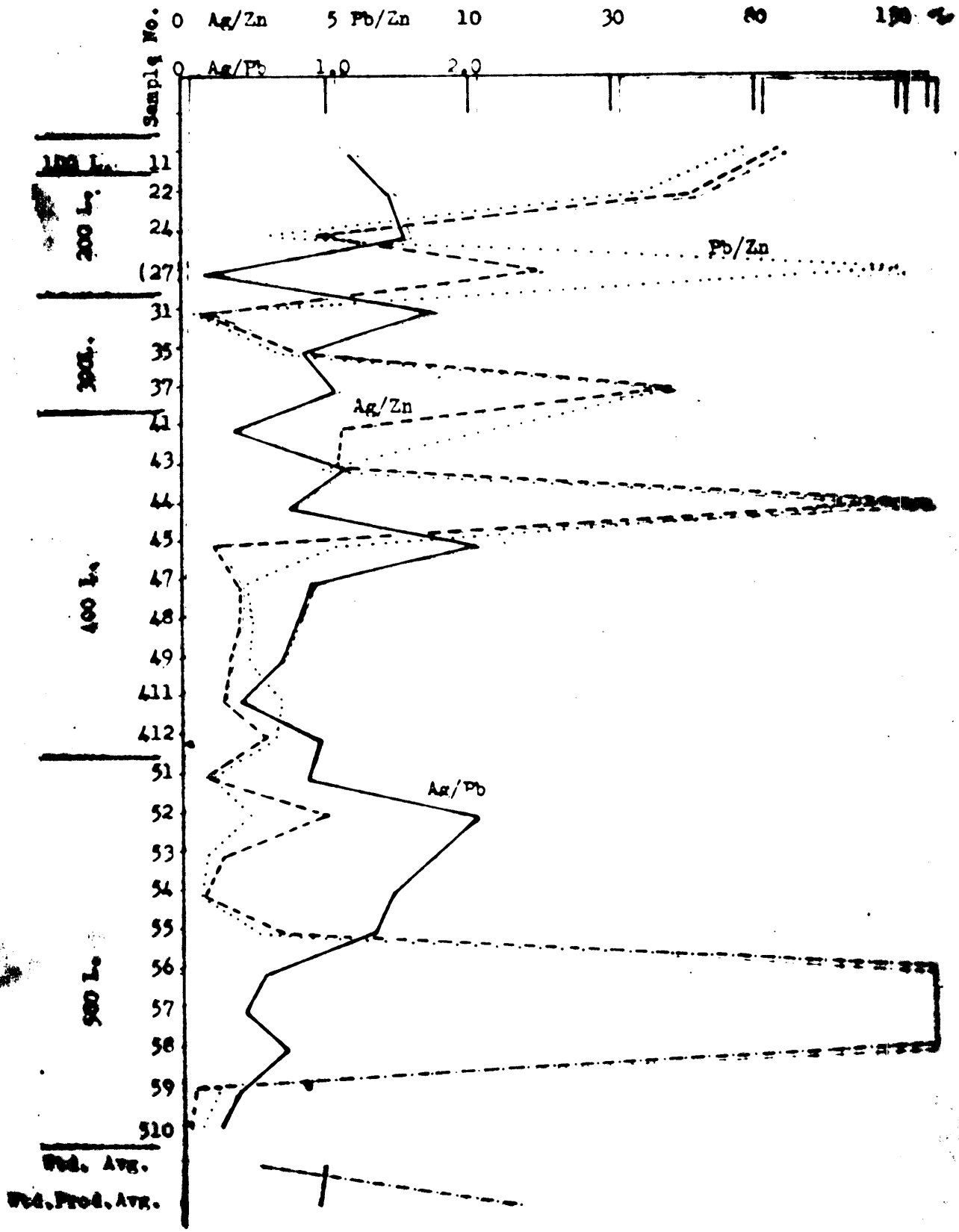
Figure-3



Ag/Pb, Ag/Zn, Pb/Zn Ratio Variation in Depth

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ITEM 4. ACCESSIBILITY OF PROPERTY:

(a) OME representatives who may examine the Hilltop Group will be met by:

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

Beginning at Leadore, Idaho, the route to the Hilltop Group 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 a cement block 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 65 miles northwest is the nearest principal supply point; however, fuel and groceries are available at Leadore, only 20 miles from the project area.

ITEM 5. EXPLORATION WORK:

(a) Both surface and underground exploration projects are proposed. Soil sampling followed by bulldozer trenching and possible shafting with branch drifts and crosscuts will explore broader tracts of the Hilltop Group. Concurrently in the Hilltop mine itself

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diamond drilling and various kinds of underground excavation will further define local potential. Results of all of this work as well as results of a current OME contract on adjacent property(OME-6286) will then be evaluated to determine the best place to drive a long, deep haulage crosscut to allow economical exploitation of any newly discovered ore which can not be mined profitably through a deep shaft.

SURFACE EXPLORATION

Phase 1. Geochemical Sampling:

The applicants propose to lay out the basic soil sample grid shown in Figure 15. This grid is bounded on the northwest by outcrops of white quartzite and on the remaining three sides by property lines. Soil samples will be taken at 50 foot intervals along northeasterly trending fence lines 200 feet apart. Soil augers will be used to extract samples from a depth of about 2 feet. Samples will be analyzed for lead in ppm; some 10% of the samples will be sent out for commercial lead analysis. Allowing for obvious barren tracts about 500 soil samples should suffice to reconnoiter the Hilltop Group, and another 500 samples should be adequate to detail anomalies found in reconnaissance.

Phase 2. Bulldozer Trenching:

The strongest discrete anomalies outlined by soil sampling will merit further exploration. Bulldozer trenching is an excellent means of achieving this objective over such unleached ore deposits as are being sought. Therefore, the applicants propose that up to 200 hours of D-8(or equivalent) bulldozer trenching be reserved to follow-up the soil-sampling program.

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UNDERGROUND EXPLORATION

Phase 1. Shafting And Drifting:

If results of surface exploration are favorable, then the applicants propose to sink on two or three of the stronger showings to better define ore-shoot characteristics. And it may prove desirable to drift and crosscut from the proposed shafts. Accordingly, the applicants request that up to 300 feet of 5 ft. by 6 ft.(clear), single compartment, timbered shaft and 600 feet of 5 ft. by 7 ft. (clear) drift be allocated to this application. Probably none of the proposed shafts will be deeper than 150 feet and no single drift will be longer than 200 feet. Actual location and extent of these workings will be matters to be decided subsequently between the Office of Minerals Exploration and the applicant.

Phase 2. Exploration Of The Hilltop Mine Proper:

During the summer of 1962 two horizontal X-Ray diamond drill holes were cored on the 300 Level(Fig. 6). The first hole, DDH No. 1, probed northerly along favorable beds and cut a typical mineralized section in the interval 107 ft. - 120 ft.(see p.36). DDH No. 2 was bottomed temporarily at 87 feet(Fig. 6).

DDH No. 1 seems to have successfully tested the multiple-vein, wall-rock-controlled-shoot hypothesis.(p.36). If extended, DDH No. 2 might prove to be equally well directed. Accordingly, the applicants propose to deepen DDH No. 2 to 200 feet and to drill four additional, similar holes(Fig. 6) on the 300 Level (lower limit of economical shaft mining?). And because X-Ray holes proved to be mechanically adequate in earlier drilling, the applicants propose to continue with X-Ray drilling. Study of Figure 6 shows that proposed drilling totals 913 feet.

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Drifting, Crosscutting, And Raising

Table 3 is a partial log of DDH No. 1.

Table 3. - Partial Log of DDH No. 1

INTERVAL	DESCRIPTION	SAMPLE	ASSAY			
			oz Ag	oz Au	%Pb	%Zn
107'-109'	Brecciated, silicified dolomite	Core	0.40	Tr	0.05	Tr
109'-112'	Brecciated, silicified dolomite & brown & white breccia	Core	0.30	Tr	Tr	Tr
112'-115'	Brown & white breccia and jasper w/sulfides(minor)	Core	0.30	Tr	0.37	Tr
115'-120'	Silicified dolomite	Core	not assayed			
112'-118'	Composite of above	Sludge	0.05	Tr	0.16	Tr

Jasper, brown-and-white breccia, and silicified walls typify Hilltop-type mineralization(see pp.15,16,17). And where ore is absent, the Hilltop vein assays about as did core from DDH No. 1(compare above values with samples No. 21 and No. 23, Fig. 5, p.22; samples No. 33 and No. 34, Fig. 6, p.23; and sample No. 46, Fig. 7, p.24). The No. 1 Ore Shoot in the area explored by this drill hole is triparted, so that high grade shoots along the vein have strike lengths less than 10 feet(see Figs. 10 & 12). There is slight chance of hitting such a small target, whose exact position is unknown, at a distance of more than 100 feet. But the vein along which shoots occur is more or less continuous, and all evidence points to the conclusion that DDH No. 1 found another typical Hilltop vein and that high grade shoots may be within a few 10's of feet east and/or west along the newly discovered vein. If so, reserves of this hypothetical, triparted(?) ore shoot should be similar to those of the virgin No. 1 Ore Shoot, i.e., about half the total production of the Hilltop mine.

Accordingly, the applicants propose that 120 feet of crosscut and 100 feet of drift be allowed to explore along DDH No. 1

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to the mineralized zone, and then to drift first easterly and then westerly along the vein in search of high grade shoots. Similar crosscuts and drifts would be proposed to follow successful completion of any of the other diamond drill holes.

During the summer of 1962, extension of the 500 Level drift a few 10's of feet easterly through the Idaho Fault found a modest shoot of ore(Fig. 8). There is reason to think that additional ore lies nearby. Therefore, the applicants propose that 150 feet of drift and crosscut(5 ft. by 7 ft. clear) and 100 feet of 4 ft. by 4 ft. raise be driven to explore this new target. Figure 8 shows one possible layout of this work. Probably any ore found by such exploration could not be mined profitably through the Hilltop shaft. But results would bear heavily upon the ultimate project: a long, deep haulage crosscut servicing the Hilltop Group and immediately adjacent property.

Phase 3. Long, Deep Haulage Crosscut:

The Hilltop mine(shaft) is too deep and the plant too inefficient to allow profitable mining of exposed ore, and much additional exploratory excavation on the lower levels would be prohibitatively expensive. Similar statements ultimately would apply to any ore body in the near vicinity. Accordingly, a surface adit is required to serve any new discoveries efficiently, and the applicants propose to drive such an exploratory haulageway. After the first two phases of the present program are completed, and after OME-6286(contract) on the adjacent property is finished, total results will be evaluated with the goal of driving a 2000 ft. - 3000 ft. crosscut(6ft. by 8ft. clear) from the surface to a point some 250 feet below the 500 Level of

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the Hilltop mine. And 2000 feet of 5ft. by 7ft.(clear) drift should be allocated to reach side targets. Plate I shows several possible sites for this adit. Should the most desirable location of the proposed crosscut lie outside the applicants' property lines, they(the applicants) guarantee herewith that they will acquire necessary property as required by OME.

(b) Access roads will have to be built to shaft sites of Phase 1, Underground Exploration, and to the portal site of Phase 3, Underground Exploration. Inasmuch as whereabouts of these roads is problematical, suffice it to state now that up to one mile of access road(14 ft. wide over gentle grades) will be required to complete indicated projects.

(c) If an OME contract is executed, work on this program will start immediately, weather permitting. Normal rates of progress and completion times for each type of work are shown in Table 4. Accordingly, some 30 months(Phase 2 plus Phase 3. Underground Exploration) would be required to complete all proposed work.

ITEM 6. EXPERIENCE:

As has been pointed out(p.10) the applicants have done some stoping and a considerable amount of exploration in the Hilltop mine. And this is only one of several family prospecting ventures. More importantly, perhaps, the Lombardis own and manage several successful businesses in Anaconda, Montana.

Thus, it is apparent that the applicants have some mining experience and considerable business knowledge. And they recognize the need for and hire qualified technical assistance to answer questions outside the relm of experience. Therefore, the applicants have all of the attributes required to execute the proposed work successfully.

Clemens A. Lombardi
1017 W. Hickory
Anaconda, Montana

TABLE 4. NORMAL RATES OF PROGRESS AND COMPLETION TIMES FOR EACH TYPE OF EXPLORATION WORK

TYPE OF WORK	SET-UP TIME-DAYS(1)	DAILY RATE	TOTAL JOB	WORK DAYS (2)	TOTAL DAYS (1)plus(2)	WORK WEEKS (6 day)	YEARS (52 WEEKS)
SURFACE EXPLORATION							
Phase 1. Geochemical Sampling	10	50 samples/ day	1000 samples	20	30	5	0.10
Phase 2. Bulldozer Trenching	3	8 hrs.	200 hrs.	25	28	4.7	0.09
UNDERGROUND EXPLORATION							
Phase 1. Shafting And Drifting	30	3ft./shift	300 ft.	100	130	21.7	0.42
Phase 2. Exploration Of The Mine							
Diamond Drilling	10	20ft./shift	913 ft.	46	56	9.3	0.18
Drifting, Cross-cutting And Raising	20	3ft./shift	470 ft.	157	177	29.5	0.57
Phase 3. Long, Deep, Haulage-way	30	4ft./shift; 2 shifts/day	5000 ft.	625	655	109	2.10

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ITEM 7. ESTIMATE OF COSTS:

INTRODUCTORY STATEMENT

The writer has spent considerable time detailing cost estimates for a number of OME loan applications. Experience indicates that this practice wastes time for all concerned, because OME estimates differ markedly from those originally submitted. Therefore, it seems reasonable and prudent to base costs for the Hilltop exploration program on costs recently established by OME for the immediately adjacent Democrat, et al. program(see OME-6286). Accordingly, costs are so estimated here.

SURFACE EXPLORATION

Phase 1. Geochemical Sampling

Establishing soil sample grids, sampling, and field testing of samples 1000 samples @ $3.60/sample	$3600.00
Commercial analyses of 100 check samples for trace amounts of lead @ $1.50/sample	150.00

Phase 2. Bulldozer Trenching;

Bulldoze trenches 200 hrs. @ $18/hr.	3600.00
Assays for the Au, Ag, Pb and Zn content of 100 samples at $7.00/sample	700.00

UNDERGROUND EXPLORATION

Phase 1. Shafting And Drifting

Bulldoze access roads and level shaftsites 50 hrs @ $18/hr.	900.00
300 lineal feet of shafting @ $90/ft.	27000.00
600 feet of drifting and crosscutting @ $38.00/ft.	22800.00
400 feet of timbering in drifts and crosscuts @ $7.50/ft.	3000.00

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Assays for the Au, Ag, Pb, and Zn content of 200 samples @ $7.00/sample	1400.00

Phase 2. Exploration Of The Hilltop Mine Proper:

X-Ray diamond drill hole 913 ft @ $7.50/ft	6847.50
370 feet of drifting and crosscutting @ $40.00/ft	14800.00
100 feet of raise @ $30/ft	3000.00
200 feet of timbering in drifts and crosscuts @ $7.50/ft	1500.00
Assays for the Au, Ag, Pb, and Zn content of 200 samples @ $7.00/sample	1400.00

Phase 3. Long, Deep Haulage Crosscut

Bulldoze access road and excavate portal site 50 hrs. @ $18/hr.	900.00
5000 feet of drifting and crosscutting @ $40/ft	200,000.00
1000 feet of timbering @ $7.50/ft	7500.00
Assays for the Au, Ag, Pb, and Zn content of 300 samples @ $7.00/sample	2100.00
TOTAL ESTIMATED COST OF PROGRAM	$301,198.00

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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

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Anaconda, Montana

APPENDIX

Sample And Production Data

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HILLTOP MINE SAMPLE DATA

Sample No.	Width	Oz.Ag	Wt.Ag	Sp.	Wt.Sp.	Sb.	Wt.Sb.
1-1	1.5'	17.80	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'	44.80	130.00	28.98	84.00	9.40	27.25
2-7	1.3'	4.00	5.20	26.25	34.15	0.20	0.26
3-1	1.2'	17.40	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	16.80
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	0.8'	12.90	10.32	6.30	5.04	2.60	2.08
5-3	2.2'	31.70	69.75	18.38	40.40	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'	22.80	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	30.50		640.49		658.61		215.55
AVGS.	1.27'		21.0 oz.Ag.		21.59%Sb		8.18%Sb

#All samples by P.N. 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 Dumecrat, et al., area.

Clemens A. Lombardi
107 No Hickory
Anaconda, Mont.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION I

Albany Office
of Mineral Resources

P. O. BOX [illegible]
ALBANY, OREGON

File No: AOMR 2010 C

May 14, 1962

Mr. Philip M. 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:

Clemenze A. Lombardi
107 No. Hickory
[illegible]

[illegible]
[illegible] Mining Districts
[illegible] County, Utah

Immersat-Canadian

Year	Ore (Short Tons)	Gold (Ounces)	Silver (Ounces)	Copper (Pounds)	Lead (Pounds)
[illegible]	30	3	790	-	15,500
1908-16	No Production				
1917	21	1	160	152	11,165
1918-57	No Production				
	[illegible]	4	[illegible]	[illegible]	[illegible]
		0.00 oz/T	17.02 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
1922-57	No Production				
	98	22	1226	514	27,852
		0.22 oz/T	12.50 oz/T	0.26%	14.21%

[illegible] j [illegible] in Est. [illegible]

[illegible] HILL TOP GROUP *

[illegible] Mining District

[illegible] County, Idaho

	Ore	Gold	[illegible]	Copper	Lead	Zinc
			[illegible]	(Pounds)	(Pounds)	(Pounds)
1901-42	No Production					
1943	145		1,763	518	27,066	
1944	No Production					
1945	53		600	178	11,311	
1946	[illegible]	33	[illegible]	1,118	52,800	
1947	152	17	1,591	600	29,500	
1948	[illegible]	113	6,851	3,739	173,116	
1949	1,058	258	12,738	5,980	284,743	
1950	2,713	448	40,907	20,695	889,092	9,854
1951	1,797	412	25,885	13,419	588,059	
1952	716	218	9,259	5,521	197,121	
1953	625	134	9,762	4,316	175,260	25,912
1954	31	3	542	100	7,400	2,000
1954	346	40	6,717	1,700	125,400	2,000
1955	410	91	5,702	3,100	128,500	25,000
1956	41	9	409	300	8,100	5,600
1957-59	No Production					
1960	39	6	318	300	[illegible]	[illegible]
	8971	1800	123,744	41,492	2,705,168	[illegible]
		0.20 oz/T	13.83 oz/T	[illegible]%	15.15%	[illegible]

* Includes: Alex [illegible], Rosebud, and Hill Top No. 1-4 claims.

NOTE: Hilltop claims NO. 5 - NO. 12 and Mill Site generalized from description on claim notices; obviously there are errors either in staking or recording

CI = 80 FEET
CONTOURS ENLARGED FROM U.S.G.S. GILMORE, IDAHO, QUADRANGLE, 1957

MULTI - PURPOSE MAP

HILLTOP - DEMOCRAT AREA

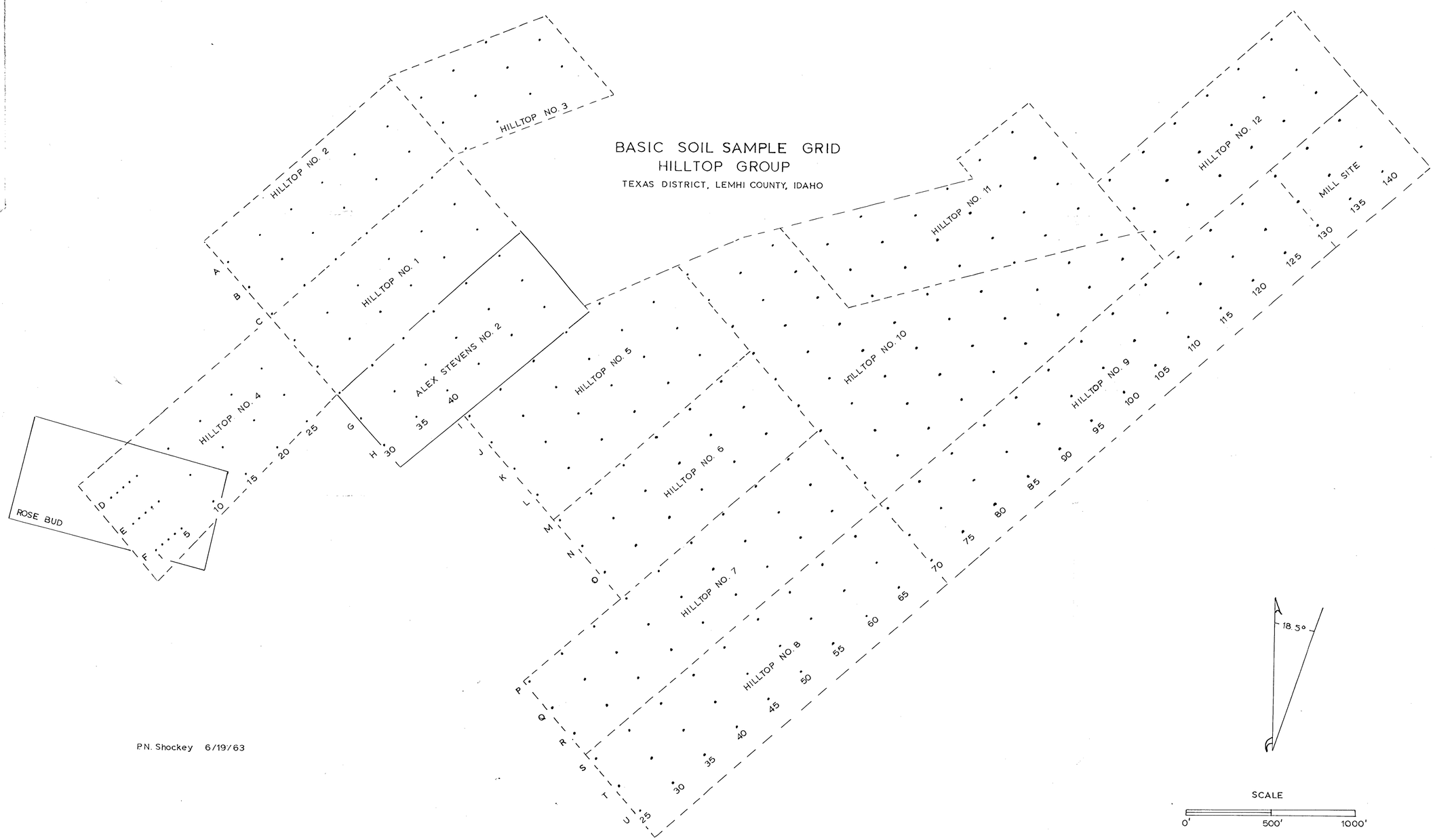
TEXAS DISTRICT, LEMHI COUNTY, IDAHO

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

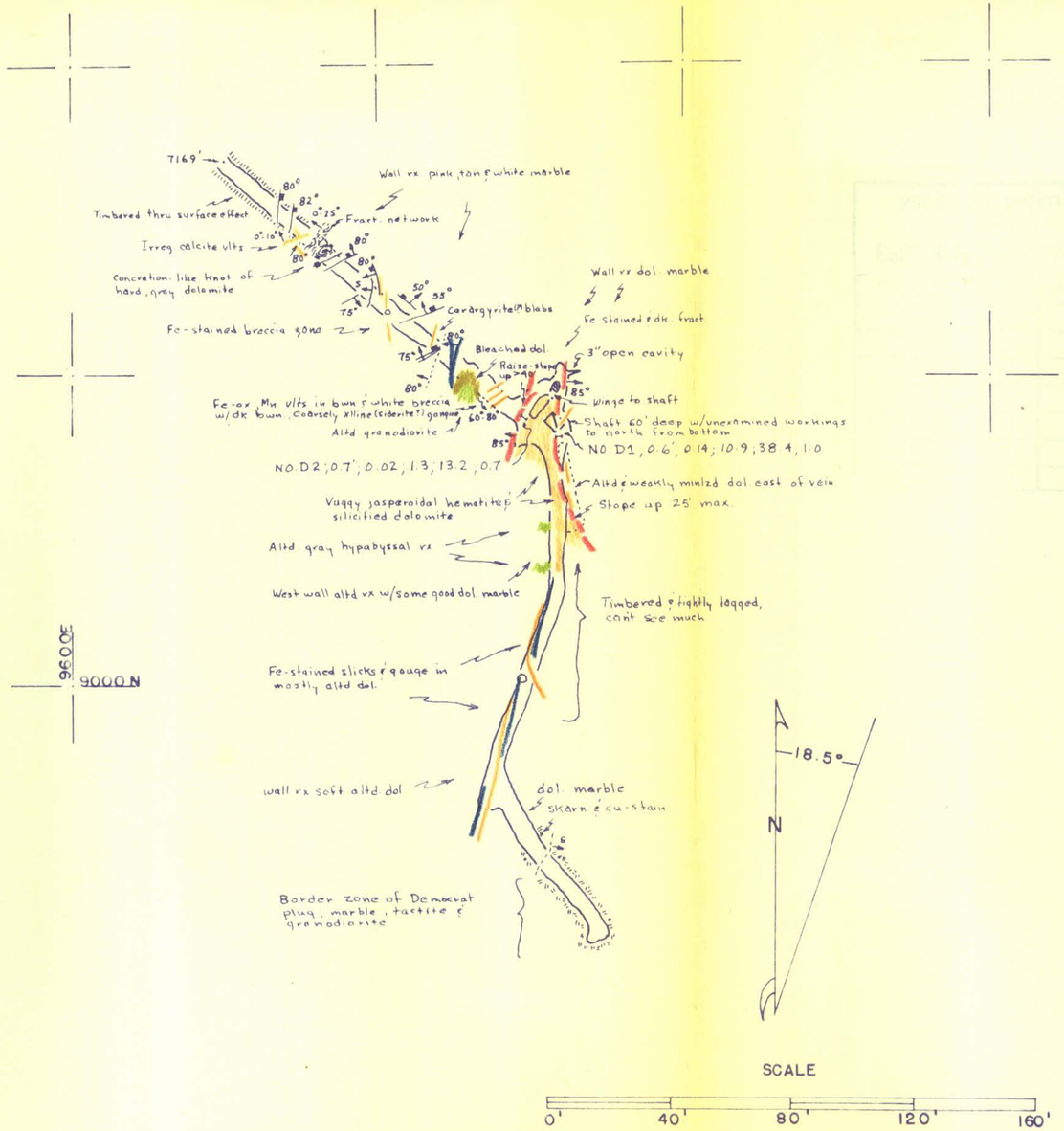
P.N. SHOCKEY 5/28/62

BASIC SOIL SAMPLE GRID
HILLTOP GROUP
TEXAS DISTRICT, LEMHI COUNTY, IDAHO



P.N. Shockey 6/19/63

GEOLOGIC MAP
OF THE
DEMOCRAT ADIT
TEXAS DISTRICT, LEMHI COUNTY, IDAHO



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

S, M, or G — STRIKE AND DIP OF STRUCTURE WITH UNMEASURED BUT STEEP MODERATE, OR GENTLE DIP ANGLE

SAMPLE SITE

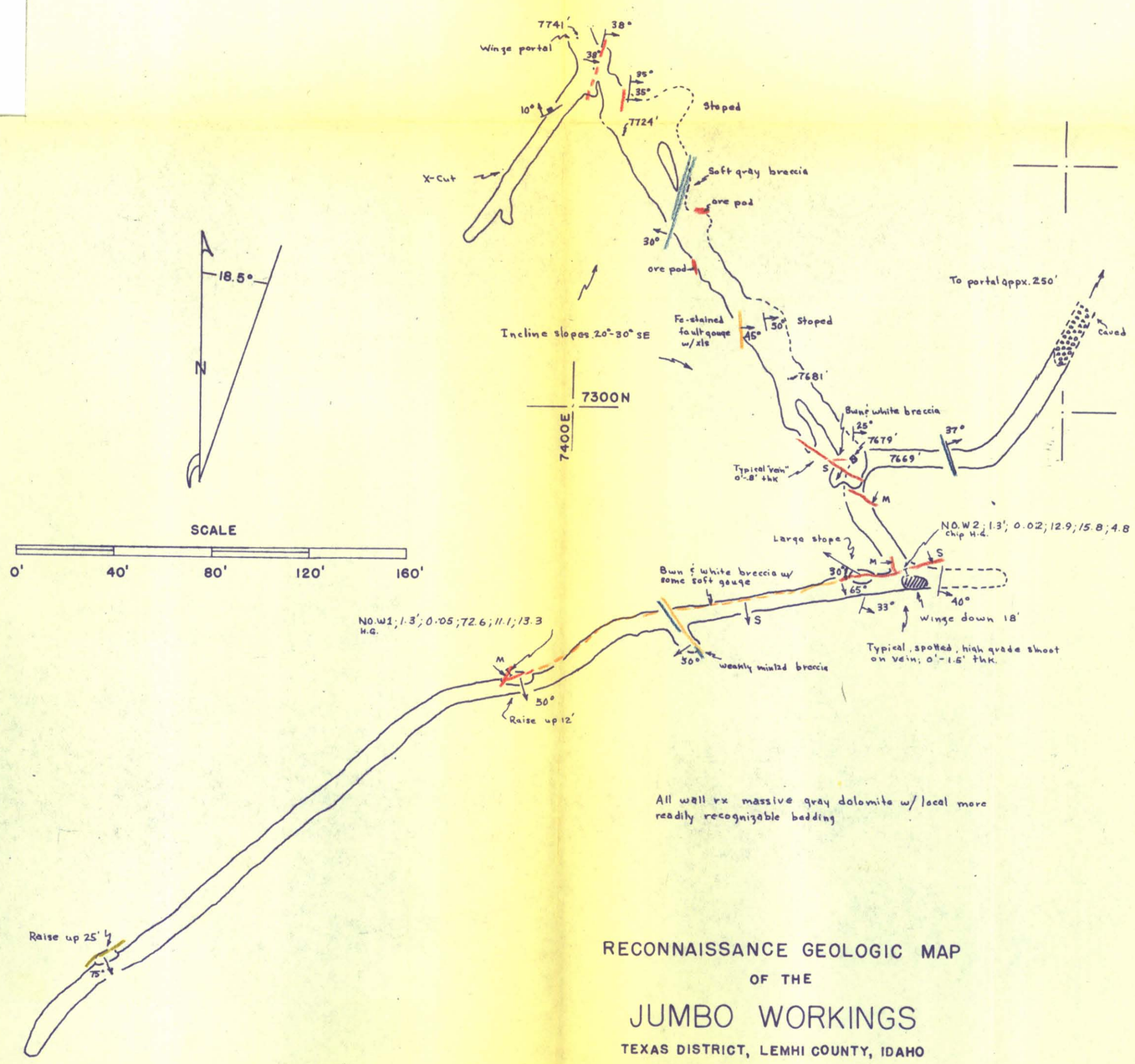
NO. D1, 0.06', 0.14, 10.9, 38.4, 1.0 — SAMPLE NUMBER, WIDTH IN FEET, AND VALUE IN OZ AU; OZ AG; % PB, AND % ZN RESPECTIVELY; ALL SAMPLES BY P.N. SHOCKEY; ASSAYS BY PETER MACK, WALLACE, IDAHO

BLECHED OR ALTERED ROCK

SCALE

0' 40' 80' 120' 160'

P. N. SHOCKEY 5/26/62



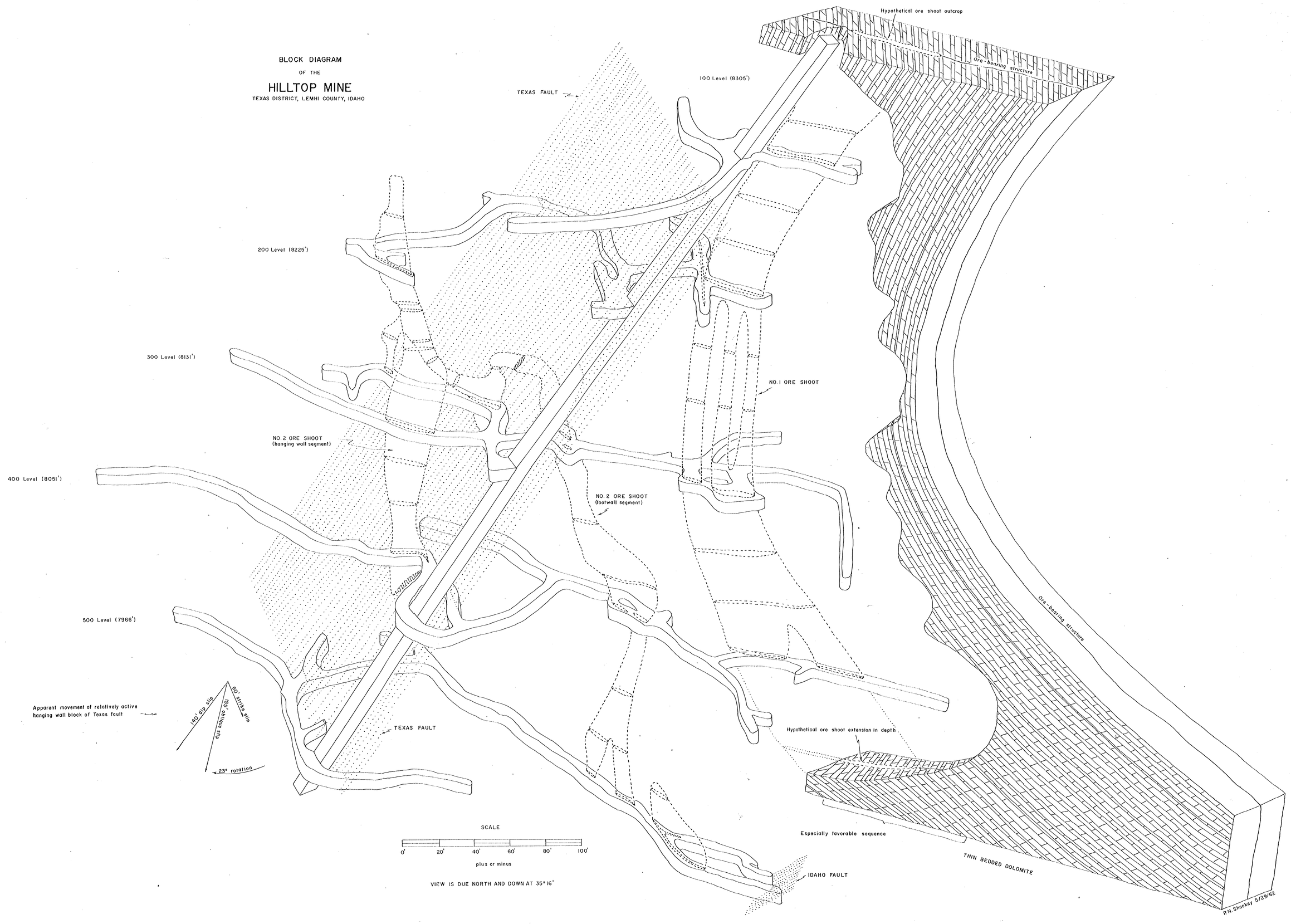
EXPLANATION

- OUTLINE OF WORKINGS
- CHUTE - MANWAY
- STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT (60°)
- 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
- NO.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

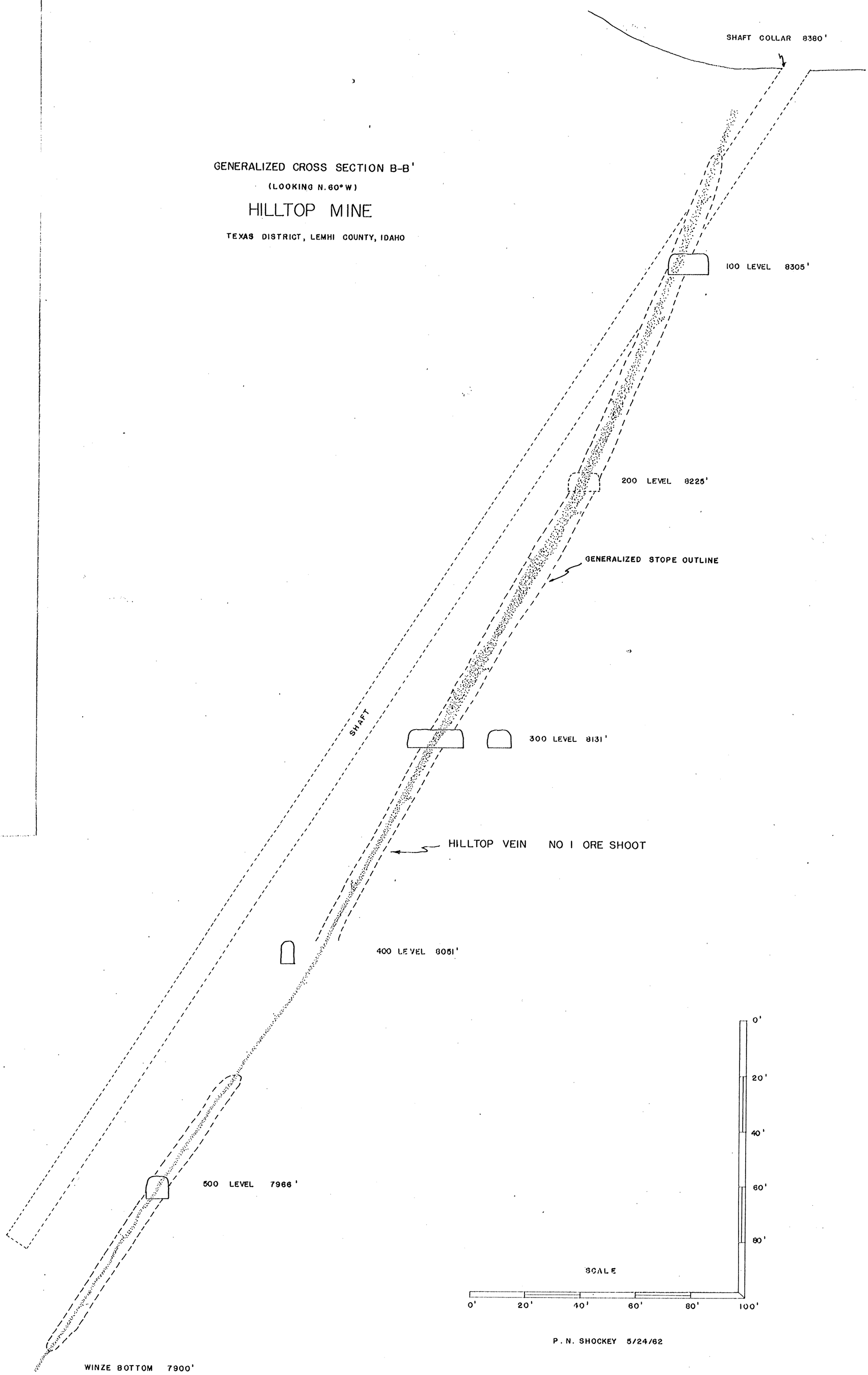

BLOCK DIAGRAM
OF THE
HILLTOP MINE
TEXAS DISTRICT, LEMHI COUNTY, IDAHO
Hypothetical ore shoot outcrop
Ore-bearing structure
100 Level (8305')
TEXAS FAULT
200 Level (8225')
300 Level (8131')
NO. 1 ORE SHOOT
NO. 2 ORE SHOOT
(hanging wall segment)
400 Level (8051')
NO. 2 ORE SHOOT
(footwall segment)
500 Level (7966')
Ore-bearing structure
Apparent movement of relatively active hanging wall block of Texas fault
140' dip slip
60' strike slip
155' 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
THIN BEDDED DOLOMITE
IDAHO FAULT
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

COMPOSITE PLAN
HILLTOP MINE

TEXAS DISTRICT, LEMHI COUNTY, IDAHO

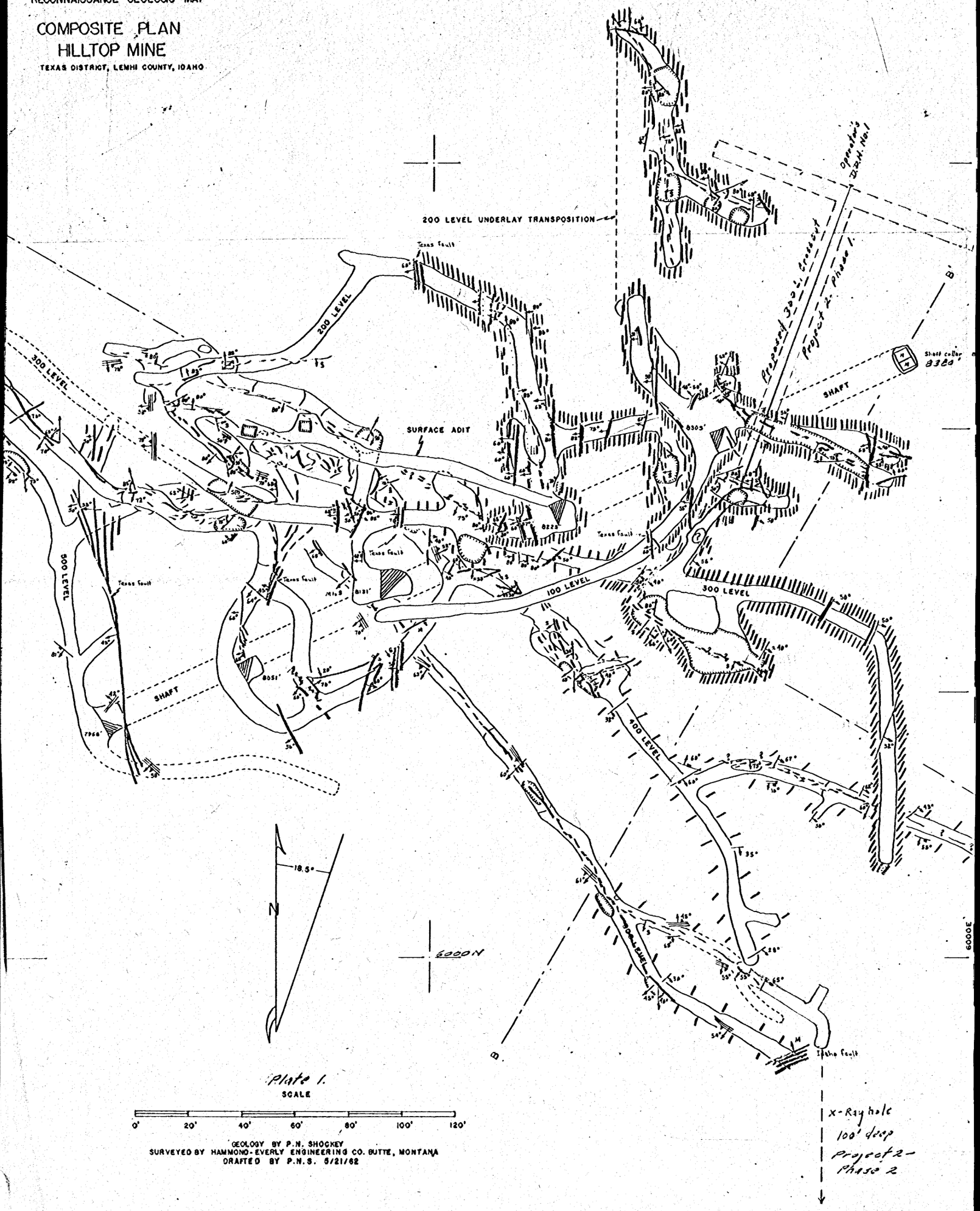


Plate 1.

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

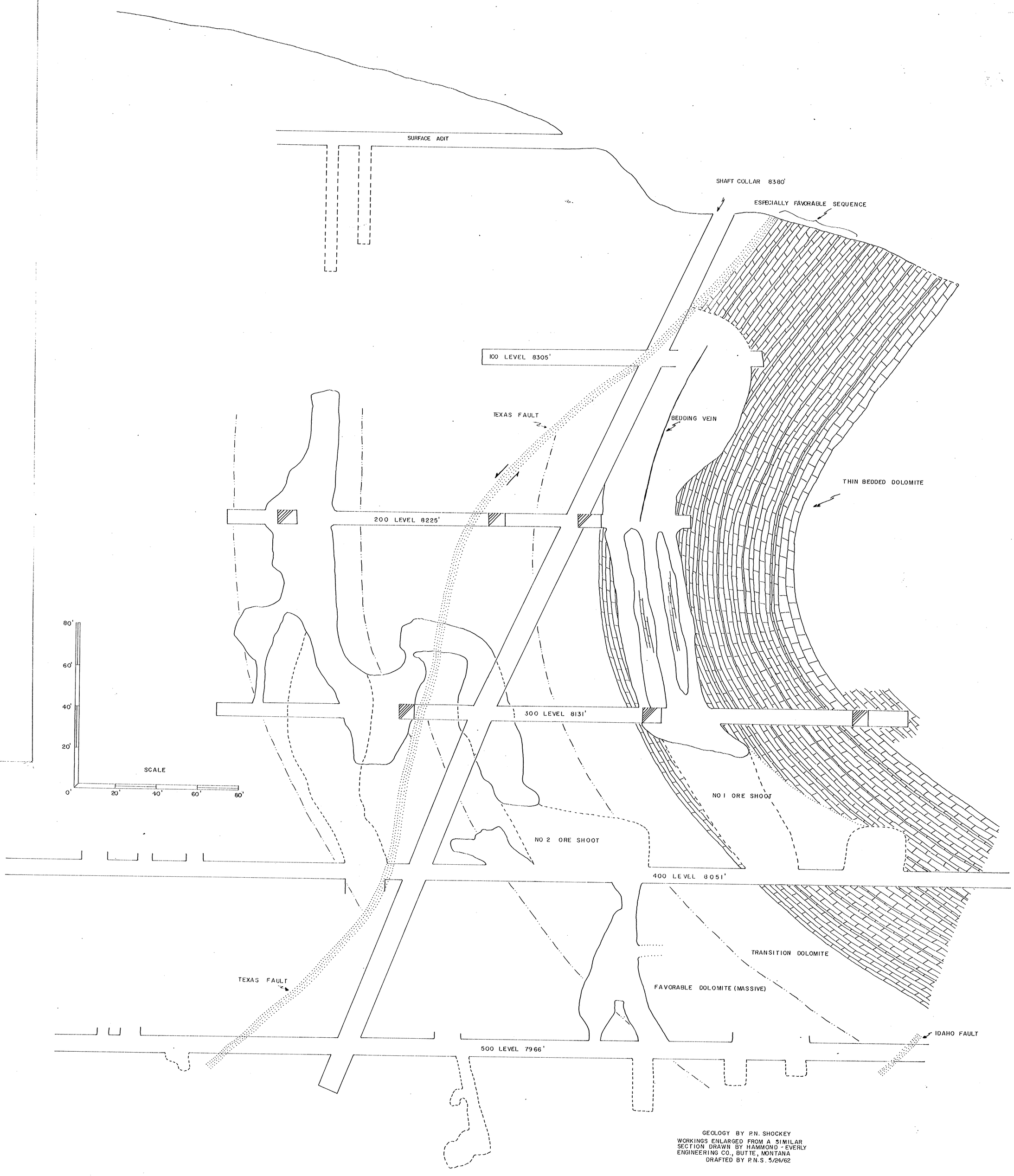
X-Ray hole
100' deep
Project 2-
Phase 2

GENERALIZED LONGITUDINAL SECTION A-A'

(LOOKING N. 30° E.)

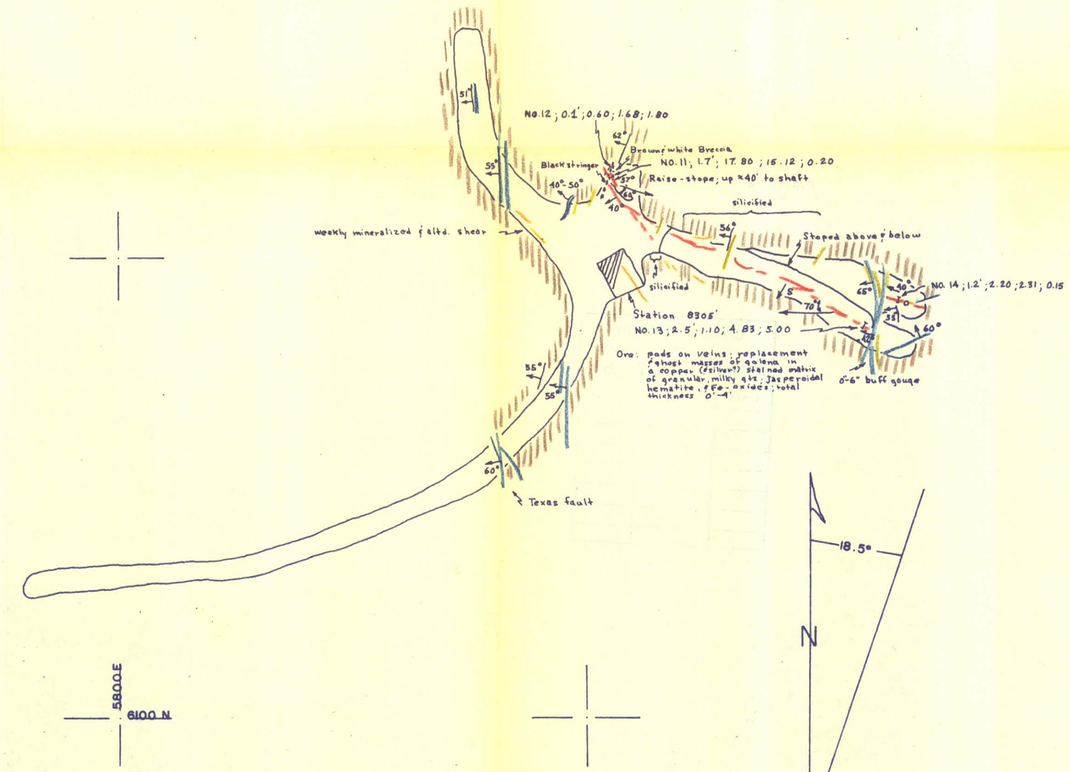
HILLTOP MINE

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
100 LEVEL
HILLTOP MINE
TEXAS DISTRICT, LEMHI COUNTY, IDAHO



EXPLANATION

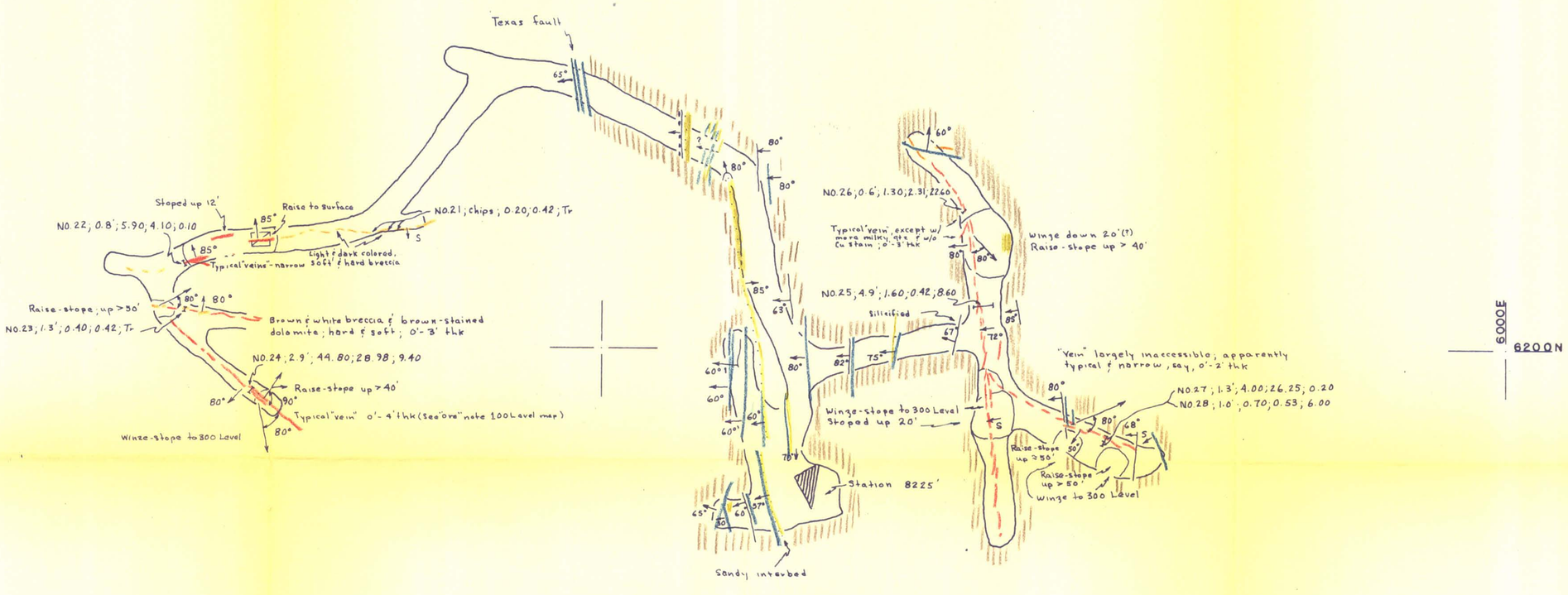
- OUTLINE OF WORKINGS
- 8225' SHAFT STATION SHOWING ELEVATION
- 60° 60° STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 55° STRIKE AND DIP OF BED
- 85° STRIKE AND DIP OF JOINT
- 45° STRIKE AND DIP OF CLEAVAGE
- 70° STRIKE AND DIP OF STRUCTURE THAT IS EITHER BEDDING OR CLEAVAGE; OTHER SIMILAR COMBINATIONS 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 ; 2.9' ; 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
- 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 INDICATES 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

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
- 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; 2.9'; 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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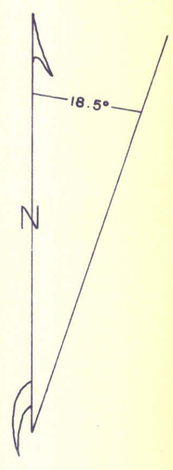
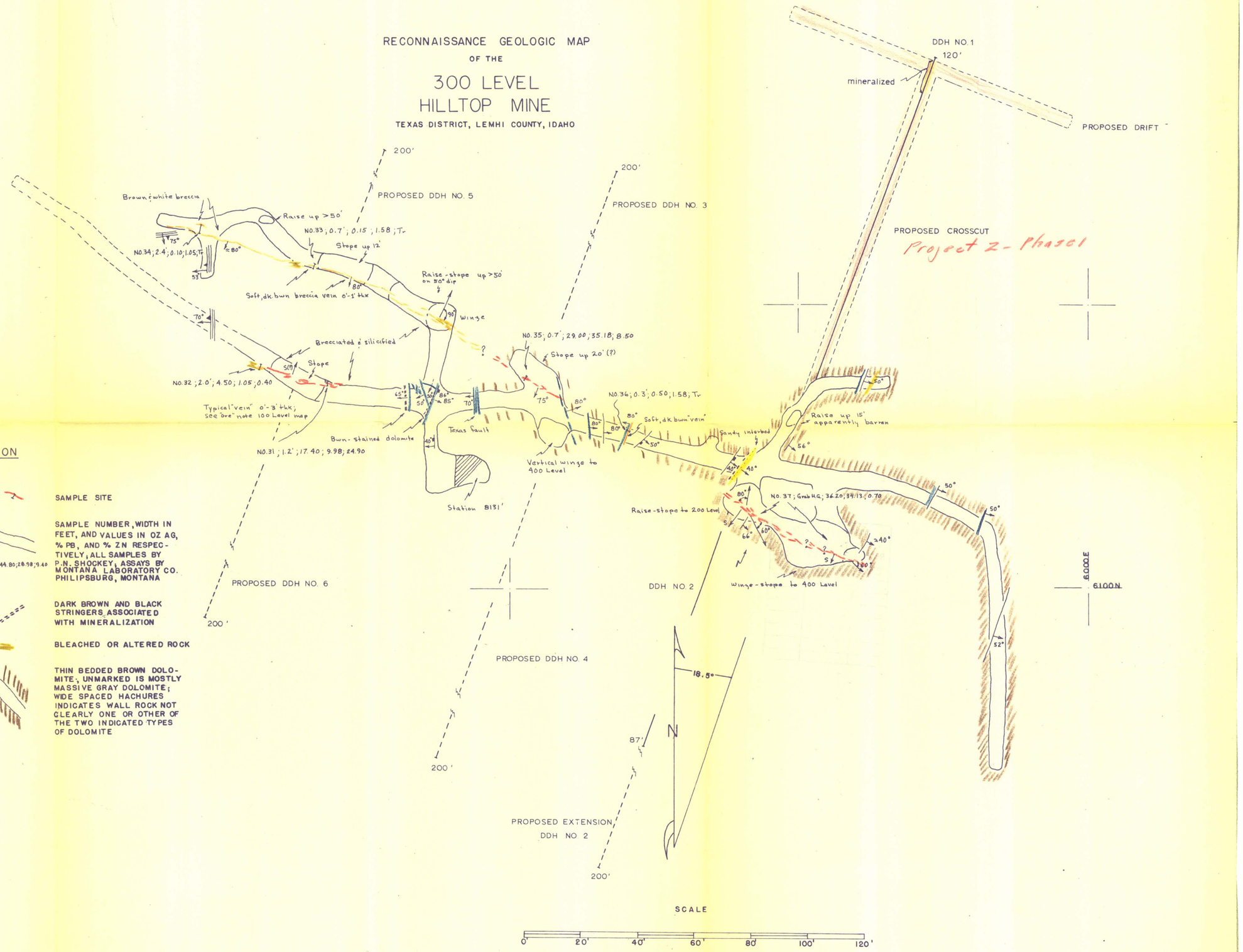


SCALE

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
- 60° 60° — STOPE, RAISE, OR WINZE SHOWING PITCH OF ORE SHOOT
- 35° — 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
- 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; 2.9'; 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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SCALE

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

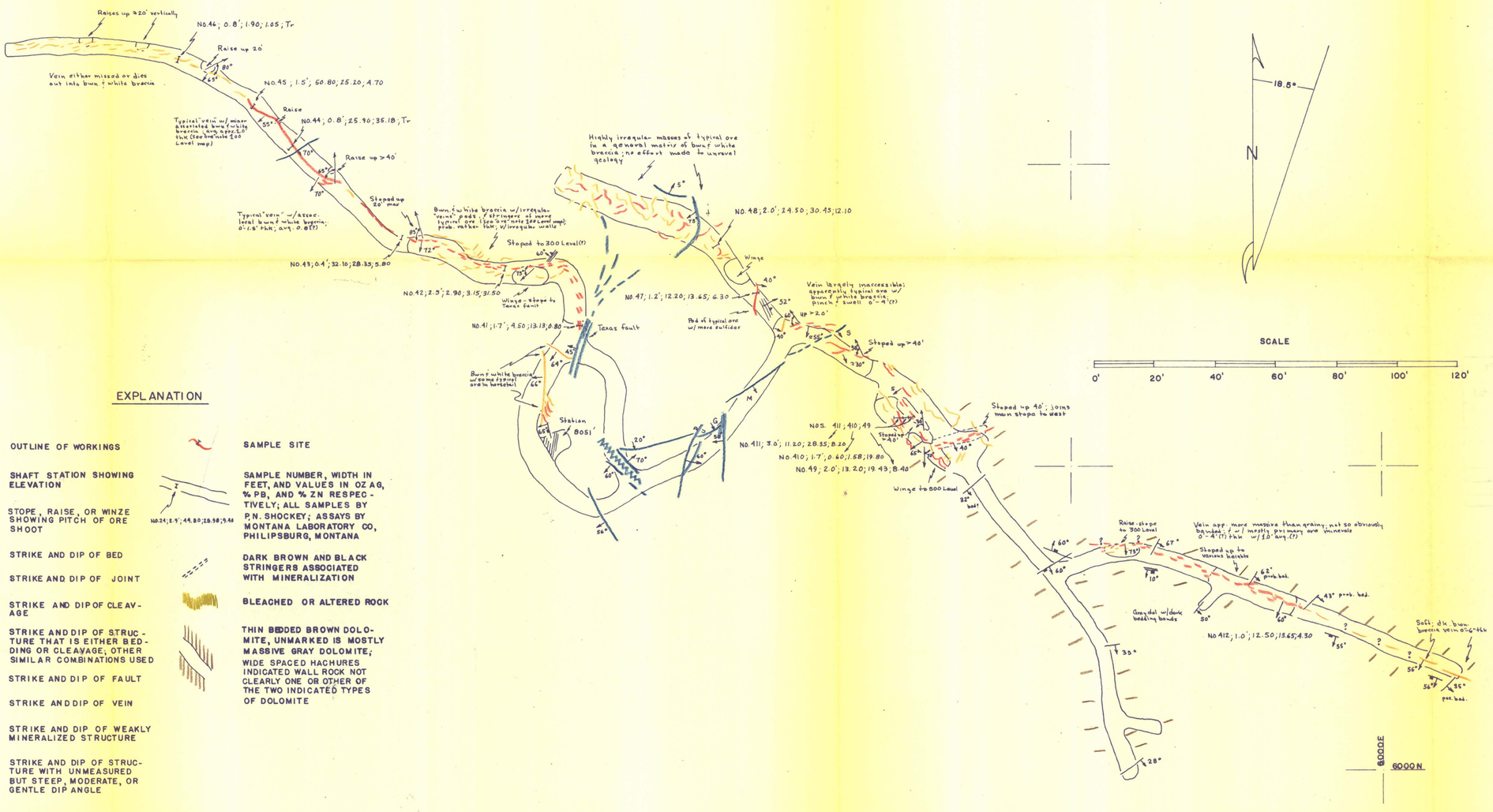
GEOLOGY BY P.N. SHOCKEY
SURVEYED BY HAMMOND-EVERLY ENGINEERING CO, BUTTE, MONTANA
DRAFTED BY P.N.S. 5/21/62

RECONNAISSANCE GEOLOGIC MAP

OF THE

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; 2.5'; 49.80; 28.50; 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
- DARK BROWN AND BLACK STRINGERS ASSOCIATED WITH MINERALIZATION
- BLEACHED OR ALTERED ROCK
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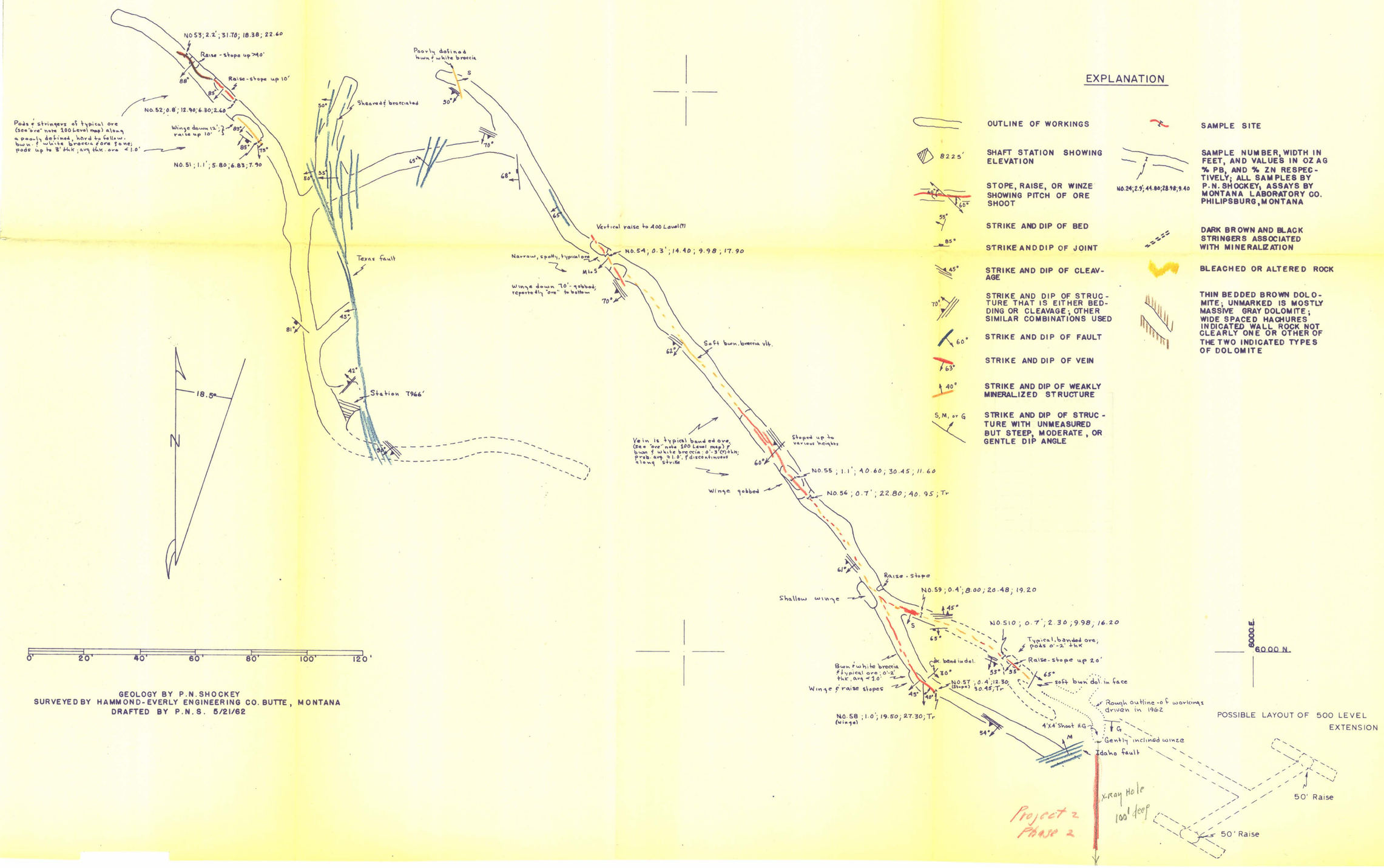
GEOLOGY BY P.N. SHOCKEY

SURVEYED BY HAMMOND-EVERLY ENGINEERING CO, BUTTE, MONTANA

DRAFTED BY P.N.S. 5/21/62

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



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