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January 14th, 1939.

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MINING ENGINEER & GEOLOGIST

Recommendations
For the opening of certain new areas on the Prescott Lease
Silver Peak, Nevada

The Prescott Lease is a very irregular shaped block of ground. It is desired to open, for exploration and development, that portion of it lying northwest of the canyon on the side of which are located the portals of the Hill tunnel and of the Last Chance tunnel. Accompanying these recommendations will be found a small scale plan showing the present mine workings, the boundaries of the northwest part of the property, and a few landmarks such as the mill, boarding house, and road to Silver Peak. It will be noted that certain large areas to the south of the mine workings are marked non-productive. These areas lie in the footwall of the present known productive horizons, where the so called footwall alaskite outcrops on the surface, and the known productive horizons have been erroded away. It is assumed that no deeper productive horizon exists below the so called footwall alaskite, and it is believed that this assumption is too well founded to warrant deep test holes at this time. The country is rugged and is cut by deep canyons, none of which give evidence of the existance of any underlying sedimentary horizon, or of any economic mineralization extending down into the footwall alaskite. These areas may then be considered nonproductive, until such time as deep tests establish the contrary.

The contact between the footwall alaskite and the overlying sedimentaries is shown on the accompanying map. Above this contact lies a series of limestones, calcarious shales, and dolomites, all somewhat metamorphosed, all intruded by alaskite sills, all somewhat contorted and badly faulted, and all ore bearing. The thickness of this series seems to increase down the dip to the northeast.

The most productive ore bearing horizon, lies just above the footwall alaskite, and practically all the production to date has come from the first one hundred feet above the contact. Commercial mineralization is known at limited points far into the hanging wall of this one hundred foot horizon, and it is yet to be determined, whether or not, the productive horizons will increase in thickness down the dip, where it is now believed that the sedimentaries are far thicker than along the outcrop.

The problem of the further development of the Lease involves two main factors. First, the determination of the extent of the commercial mineralization on any given horizon, and second, the determination of the number of such horizons that may prove economically worthy of exploitation. In entering a new unprospected area, it would seem advisable

to confine development work to the zone lying next to the footwall, but this should not be done to the complete exclusion of investigating the higher horizons, as the possibility always exists that the mineralization, as followed downward, may not maintain its position stratigraphically, or that the footwall contact may not maintain its relation to the sedimentaries. In selecting the method of attack, which it is hoped will yield the maximum return for the money invested, the above considerations should be borne in mind.

THE MOHAWK CLAIM. The area below the Mary tunnel does not offer a great variety of possible angles of attack. The lowest available tunnel site on the property, which allows for a limited but reasonable waste dump, is located near the hairpin turn on the road to Silver Peak, as shown on the accompanying map. The Hill tunnel, which was driven a few hundred feet into the Lease ground a year or so ago, lies on the same elevation as this site. A cross cut tunnel from this point would cut almost all the productive horizons, and, with a little auxiliary work along the favorable indications, would pretty conclusively settle the conditions that might be found in the hanging wall. It would not reach the footwall, until it intersected the line of the Hill tunnel prolonged, nor would it open, for development and mining, the contact below that level, nor the lowermost claim of the Lease group, which is called the Mohawk and whose center is near the hairpin turn on the Silver Peak road. This claim can only be developed by shafts, either inclined or vertical. There are showings that give hopes of ore at a relatively shallow depth below the canyon floor, but the projected position of the footwall under the hairpin turn, lies some three hundred feet below the surface. This position was obtained by continuing the plane passing thru the outcrop and the Mary tunnel, and while obviously open to question, it is based on the best data available.

The development of this Mohawk Claim could be undertaken by ,-

(1) (a) A vertical shaft at the point marked (1) on the map, with levels at 100', 200', 300', and 400', or-
(b) A vertical shaft from the surface near the present course ore bins, or-
(c) Levels run off from the 340 N-S winze continued 2500' downward to the property line.

(a) The proposed vertical shaft near the hairpin turn, is centrally located to serve the ground in question. It will reach its objective in a minimum of time, and at a minimum of outlay. From its collar to the coarse ore bins of the mill, is but a 1000' over terrain suitable for a cheap and efficient jig back tram. The site is convenient to power and water, close to the main road, and yet out of danger from flood waters, and entirely uncongested. It would cut

the horizons of the hanging wall as it was being sunk, and provide the desired information. The production from this shaft, if ore were encountered, would interfere with neither the Mammoth production nor that from the Lease from the levels above the Mary, while waste room at the collar is limited but sufficient for the requirements of the project.

(b) The site for the vertical shaft, which was recommended some time ago, is now occupied by buildings and is hence no longer available. The location of a shaft near the ore bins, might at first seem desirable, as eliminating any tramming, but, on investigation, it is found to be extremely difficult, to locate a satisfactory shaft site adjacent to the coarse ore bins, and one even a short distance away, has no advantage over one well removed, as the cost of transportation, over such short distances, is almost entirely at the terminals. It has the additional objections of greater first costs, of greater operating costs, and of a very poor location with reference to the property lines.

(c) Were the present 340 winze continued north 2500' to the property line, it could be made to serve all but the bottom of the Mohawk claim, which could then be reached by a sublevel winze. This attack on the area in question has numerous objections, time involved, cost of handling the ore and waste, necessity of maintaining worked out stopes along the right of way, difficulty of following the proper horizon, the crowding of the already overcrowded Mary tunnel, the necessity of providing flat slope bin room for both ore and waste at every level, and the excessive distance the ore must be handled to reach the mill bins. This same winze will nicely serve the territory to the northwest from the Mary tunnel down to the level of the collar of the proposed shaft, and, if continued upward, will be a great advantage in opening and exploiting the territory between the Mary tunnel and the outcrop, but will not serve as a substitute for the proposed shaft.

(1a) is therefor strongly recommended, and, as a preliminary, a test hole by diamond drill is recommended at the hairpin turn on the Silver Peak road. Said drill hole to dip 68 degrees into the hill south 45 degrees west, and continue until the footwall has been established.

(2) The Hill tunnel is well located for the development of the area between the ground tributary to the proposed Mohawk and the Mary tunnel. There seems no alternative worthy of consideration. It is recommended, that a drill hole be put in from the surface, to locate the contact a short distance northerly of the present face. This hole should dip 68 degrees south 45 west. Depending upon the results obtained, the tunnel should then be turned slightly to cut the contact and then driven northwest to the property line some 2500' away. As driven, it should be connected with the bottom of the 366 winze, some 700' ahead and 40' above the

present face, and with the Mary patio by a vertical shaft raise, and to the bottom of the 340 winze, slightly prolonged, by direct connection. Meanwhile, any work off the present north south 340 winze that approximates the same horizon as the Hill tunnel, should be so located that the levels established should correspond exactly with the present Hill tunnel level, after proper allowance has been made for the desired grade.

(3) Aside from the limited area of the 342 stope, no development work has been done below the Elizabeth level and northwest from the 314 ore body to the property line, the distance of about 1000', excepting only the Mary tunnel itself. This tunnel was evidently to be a major tramming level, and little attempt was made to follow the intricacies of the ore horizon. This portion of the Mary tunnel is now being used for the extraction of the Mammoth ores, hence there is little chance for mining and developing along this section at present. Two alternates are available for exploring this area.

(a) Provide track facilities from the end of our present waste dump track to the mouth of the cross cut tunnel at the property line, a distance of 1500', and in thru the tunnel to join the present track, a total of some 2100'. The rails are available, most of the grade can be built by dumping waste along the line, and several hundred feet are already completed. The total cost, not including the rails, should not exceed $2000, and if properly done, should be extremely advantageous to all parties concerned. If the cost of this work were $25,000 rather than the $2000 estimated, I would still strongly recommend it, as a highly profitable investment. It seems to me, almost equally advantageous, whether the properties are worked separately or combined, or whether the Mammoth ore is milled on the mountain or in the valley. The question of additional compressor capacity, will inevitibly arise very shortly, and it will then become necessary to decide whether the additional equipment will be located at the mouth of the Mary tunnel, in the already overcongested patio, where the fire hazard is already enormous, or whether the new machines shall be located elsewhere, as for example, at the mouth of the property line tunnel. We believe this stretch of ground to be prolific, basing our judgement, however, on the conditions found on the Elizabeth level above, and should such be the case, it requires no detailed estimate to show that the cost in locked up ore, required to maintain this level in the condition warrented as the main entry to the Mammoth ground, would be far in excess of duplicating the Mary tunnel and many, many times that required for the proposed exit thru the already driven property line cross cut tunnel.

(b) Should (a) be considered inadvisable, then at coor. 6555 E-3742N, Sta. 315, Mary tunnel, drive north westerly following the ore horizon. This will develope an area on

which we greatly desire and need information.

(4) At the present time, as part of the normal work now being carried out, a cross cut is being run northerly from the southeast face of the Elizabeth to connect with the top of the 304 stope. From a favorable point, to be selected as soon as this connection has been made, continue southeast along the ore horizon, passing below, down dip, the Last Chance workings, and if conditions are foundencouraging, continue same to the surface. This drift will start in, of near, the footwall of the Gany that has been troubling us in the 304 and 366 stopes, and will probably encounter the flat fault that cut off the 340T stope. Both need solving, and this is an excellent place to do the job, but it must be realized that difficulties will be encountered and that some cross cuts and raises will be required before a satisfactory solution of the problems involved is reached.

(5) Within the semideveloped area, the most important geologic problem facing us at present is the determination of the stratigraphic interrelation of certain ore bodies. This year will probably clear away most of the difficulty in the course of normal operations, but in order to direct our efforts with more assurance during the year, #5 is recommended for immediate prosecution. On the surface, over the lower edge of the Western Soldier ore body, and about 100' above, there is an outcrop that has, at sometime in the past, been slightly opened by a few small surface cuts and pits. Conditions are not sufficiently exposed by these cuts to give any clear idea of the possibilities, but are considered as worthy of further investigation. It is therefor recommended that a raise be put up from the top of the Western Soldier ore pass, north into the hanging at 60 degrees. It is expected that this will encounter the horizon on which the ore outcrops at a little under 100', and it is recommended that this then be followed up the dip to the outcrop about 75' above.

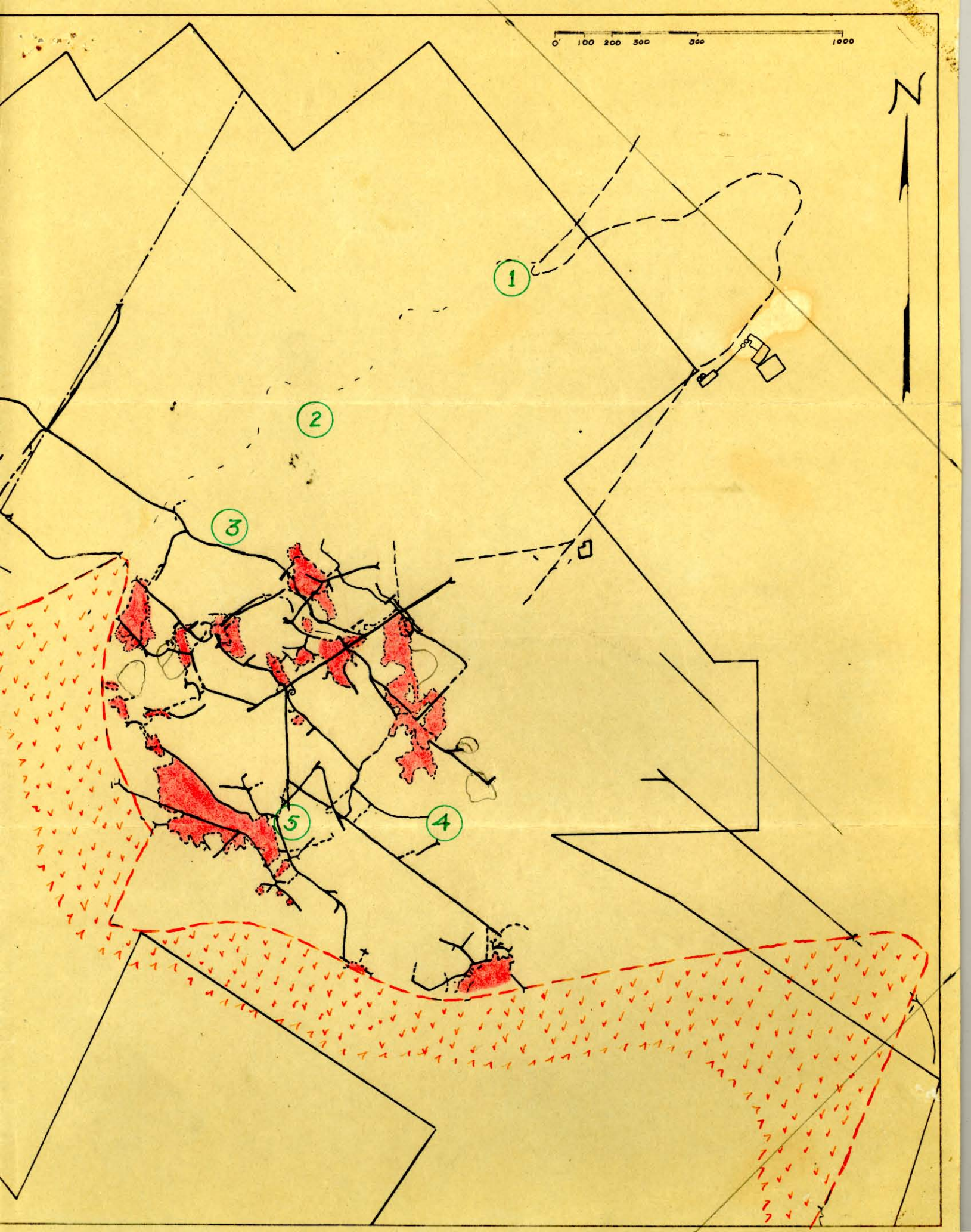
The order in which these should be undertaken, may be varied to suit requirements. Each is independent of all others. Specifically (1) and (2) may be started as soon as the drill holes are completed, (3) may be undertaken as soon as it is determined which of the two alternatives is to be followed, (4) should be started shortly after the connection to 304 is made, while (5) should be started at once.

Respectfully submitted,

Basil Ruscoff

cc A N Sweet

January 14, 1939.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F. E. CALKINS

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Silver Peak, Nevada
Jan. 16, 1939

PRESCOTT LEASE, Black Mammoth Con. Mining Co., Silver Peak, Nevada

SEQUENCE OF GEOLOGIC EVENTS

1----Folding of the sedimentary rocks, which produced bends (rolls) in both strike and dip of the limestone bedding planes, accompanied and very closely followed by shearing along bedding planes and by some cross-shearing.

The strike of the bedding planes, resulting from this folding and some subsequent distortion by alaskite intrusion, is nearly but not quite all in the northwest quadrant and varies through all strikes from S 70 W around through the northwest quadrant to N 30 E. A very common strike is in the north-northwest octant, with an average of about N 20 W. Another, less common strike is about N 75 W and is the combined result of bending and minor cross-shearing, the latter being absorbed along the bedding planes within short distances. The general average strike of the bedding in the area mapped seems to be about N 40 W.

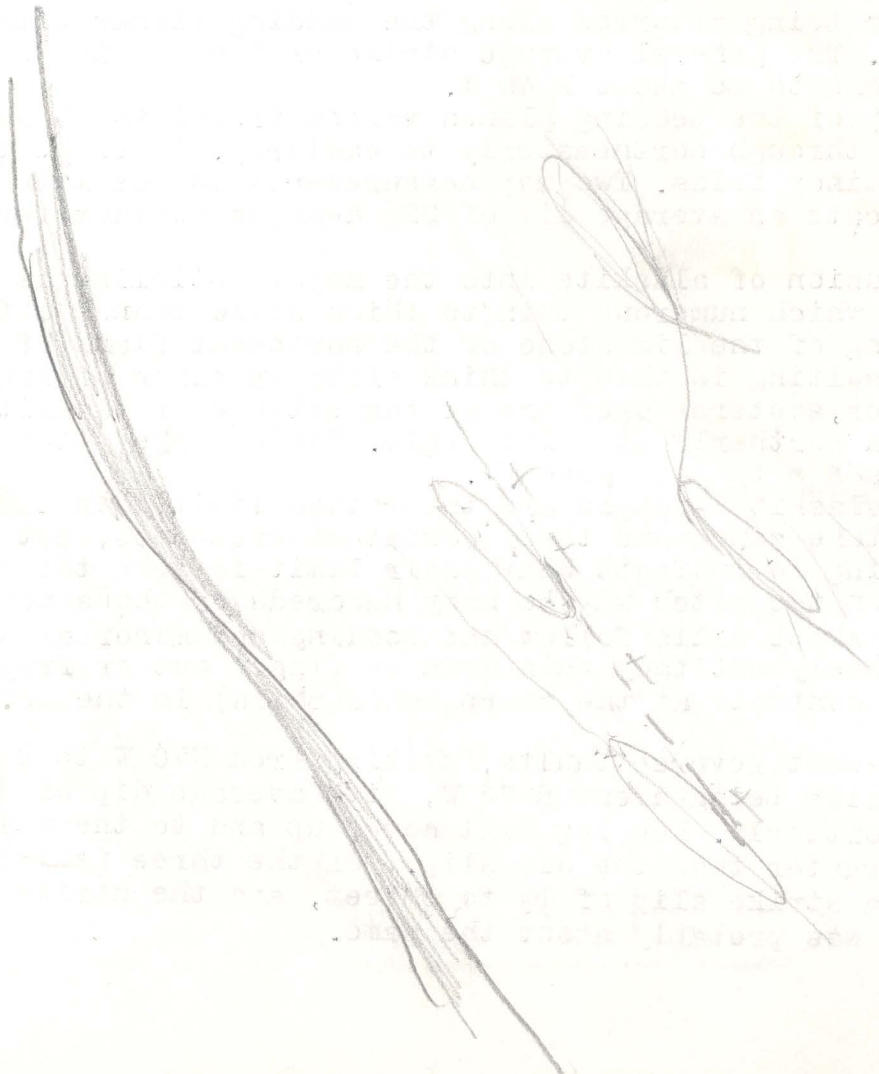
The dip of the bedding planes varies from 0 to 90 degrees northerly through northeasterly to easterly. A few westerly dips occur in minor folds. Two map measurements on the main hanging wall indicate an average dip of 22½ degrees northeasterly.

2----Intrusion of alaskite into the major anticline as a massive core from which numerous thin to thick sills branch off up along the bedding of the limestone on the northeast flank of the anticline, resulting in thin to thick slabs or zones of limestone whose lower, eastern edges are at the bottoms of alaskite troughs that pitch northerly at a low angle. The average pitch is about 15 degrees N 5 to 10 degrees W.

These alaskite troughs are the bottom limit, down the dip, of the limestone zones and their contained orebodies, but I have seen nothing to indicate what their limit is down the pitch. Their extent down the pitch may be many hundreds or thousands of feet.

The alaskite sills follow the bedding and minor cross-shearing pretty closely but they thin down or finger out or fray out in intrusive contacts at the sharp bends (rolls) in the bedding.

3----East-west reverse faults, striking from N70 W to S 70 W, a common strike being about N 75 W, with average dip of 40 to 45 degrees northerly. Hanging wall moved up and to the west. Strike slip is greater than the dip slip. Of the three faults mapped two show a strike slip of 1½ to 3 feet, and the strike slip of the third was probably about the same.



The horizontal compressive stress was still active when they were formed, and the theoretical complement of the N 75 W strike is N 35 E. Therefor some faults of that strike may be found to be of the same age as the east-west faults.

The east-west faults have had a considerable disturbing effect on the continuity of the later gold-quartz intrusions.

4----Intrusions of gold-bearing quartz into the limestone zones, the general course of the intrusions being up from the north, under alaskite hanging walls, approximately parallel to the pitch of the alaskite troughs, resulting in the formation of gold-quartz ore in definite and continious runs, but with great variation in thickness and considerable variation in drift length.

The direction of pitch of the lower, eastern edges, or "side walls", of the ore-runs varies considerably but in general is roughly parallel to the pitch of the alaskite troughs.

Have not given much study to the upper, western side walls but they are probably due to pronounced bends (rolls) in the limestone bedding and alaskite hanging walls.

5----Normal faults in the northeast quadrant, principally in the north-northeast octant. The total slip on the ones mapped is only a few feet. Also shearing and grinding on many of the older faults and shear planes and some of the intrusive contacts, with evidently only very little slip.

The above information was obtained by four months detailed mapping and study of the northwest Mary Level, all of the Lower Mary level, and the intermediate sublevels and stopes.

F. E. Calkins